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PIT AND QUARRY

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FEBRUARY, 1942

Heat Recovery with the Air-Quenching Cooler . . . Aggregates for Nantahala Dam
National Concrete Masonry and Sand-Lime-Brick Associations Convene at Buffalo

LUDLOW-SAYLOR

CONTROLLED-TEMPER SUPER-LOY WOVEN WIRE SCREENS

for super-severe service

●

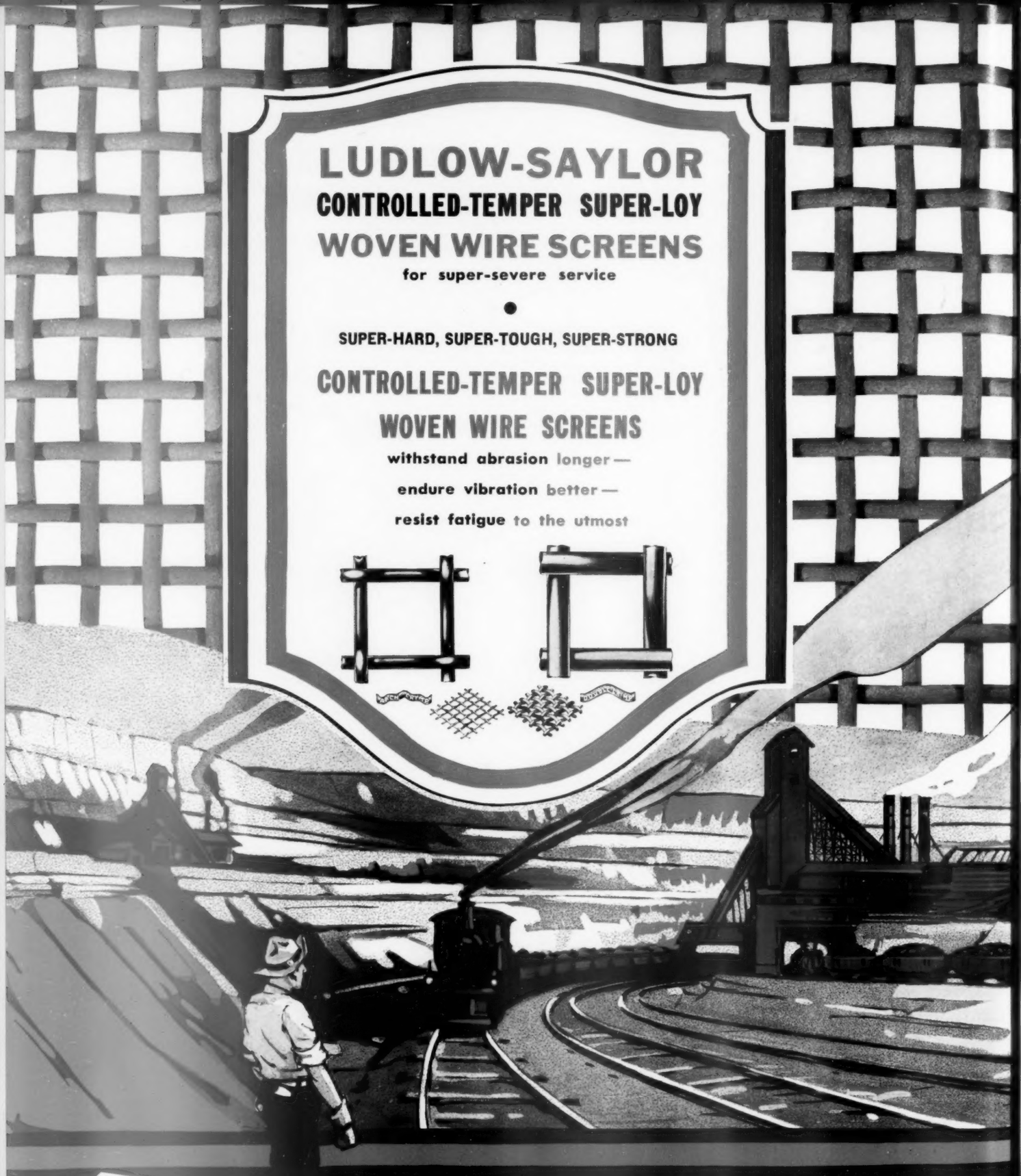
SUPER-HARD, SUPER-TOUGH, SUPER-STRONG

CONTROLLED-TEMPER SUPER-LOY WOVEN WIRE SCREENS

withstand abrasion longer—

endure vibration better—

resist fatigue to the utmost



The background at top of page shows the "Perfect" Double-Crimp Weave.

The small cuts in the center panel compare Arch-Crimp Weave and Double-Crimp Weave.

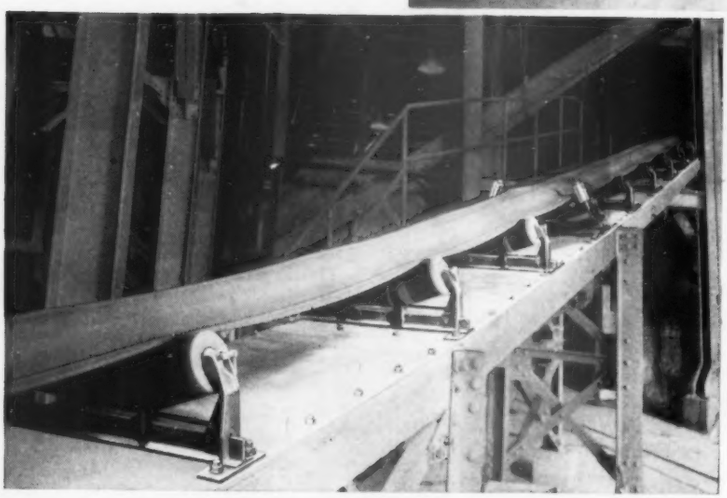
The border at foot of page shows "Perfect" Double-Crimp Steel Wire Cloth which has been hot-dip galvanized after weaving.

Samples on request.

The LUDLOW-SAYLOR WIRE COMPANY SAINT LOUIS

1200 Tons of Crushed Ore Handled Daily With LINK-BELT BELT CONVEYORS

Action photograph of one of two 36-in. wide belt conveyor feeders handling crushed ore from mill ore bin to collecting conveyor shown in lower illustration. Each feeder conveyor may be operated at 10 to 30 feet per minute through a Link-Belt P.I.V. Gear variable speed transmission, worm gear speed reducer, and encased Silverlink roller chain drive.



18-in. wide collecting belt conveyor operating at 150 feet per minute, handling crushed ore to rod mill from the two conveyors in upper illustration.

● These Link-Belt anti-friction belt conveyors are keeping production "on the move" 24 hours a day, handling approximately 50 tons of crushed ore per hour, from mill ore bin to rod mill. They include two slow-moving 36-in. wide feeder conveyors under bin, and an 18-in. wide collecting conveyor to which the two feeder conveyors discharge.

All three conveyors use Type 70 Troughing type carrying run and Type 71 return run idlers, and are driven through Link-Belt mechanical power transmission units. The two feeder conveyors are each equipped with a Link-Belt P.I.V. Gear variable speed transmission.

You too can profit by Link-Belt's long experience in solving conveying and mechanical transmission problems —whether for new or modernization installation needs.

LINK-BELT COMPANY

Engineers and Manufacturers of Materials Handling and Mechanical Power Transmission Machinery Since 1875

Chicago, Indianapolis, Philadelphia, Atlanta, Dallas, San Francisco, Toronto. Offices and warehouses located in principal cities.

8707-D

LINK-BELT

● A TYPE FOR EVERY SERVICE

BELT CONVEYOR EQUIPMENT

IDLERS • TRIPPERS • BELTS • PULLEYS • BEARINGS • TAKE-UPS • DRIVES

PIT AND QUARRY, February, 1942, Vol. 34, No. 8. Published monthly by the Complete Service Publishing Company, 538 South Clark Street, Chicago, Ill. Subscription price $1 for 1 year in the U. S. and possessions, Canada, Central and South America; elsewhere $1 additional for each year. Single copies 25 cents. Entered as second-class matter February 28, 1932, at the Post Office at Chicago, Ill., under the Act of March 3, 1897.

(And conversely—)

Don't send a man to do a boy's job!

IT'S pretty obvious that this big fellow should be putting his strength to some more productive use.

And it's just about as obvious that the same principle also applies to pipe. Yet the simple fact is that a lot of pipe strength is being wasted in services where much lighter wall thickness would be adequate — that a lot of steel is going into pipe that should go into tanks and guns and planes.

To get right down to cases, light wall Taylor Spiral Pipe can handle a large percentage of the jobs for which Standard Thickness is ordinarily used at an installed cost which is perhaps twice that of Taylor Spiral Pipe.

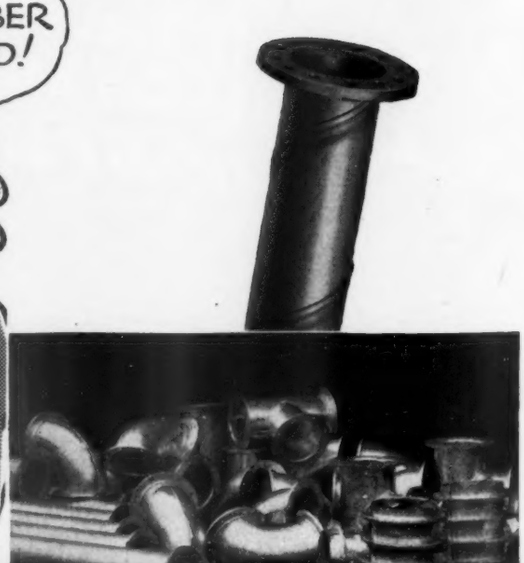
They don't have to be easy jobs either, for Taylor Spiral Pipe is plenty tough — much stronger, in fact, than even seamless pipe of equal gauge.

Sizes range from 4 to 42 inches — thicknesses, from 18 to 8 gauge. All types of end joints, all kinds of fittings and "specials" and fabricated assemblies are produced by Taylor Forge, assuring complete service and undivided responsibility.

Yes, when you use Taylor Spiral Pipe you help save the dollars and steel that are so vital to wartime industry.

TAYLOR FORGE & PIPE WORKS

General Offices & Works: Chicago. P. O. Box 485 • New York Offices: 50 Church St.
Philadelphia Office: Broad Street Station Bldg.



● Complicated piping layouts are handled in a trim, workmanlike way with these Taylor Forge Light Wall Fittings in combination with flanged Taylor Spiral Pipe. Special factory-made fabrications are as accurate as the plans.

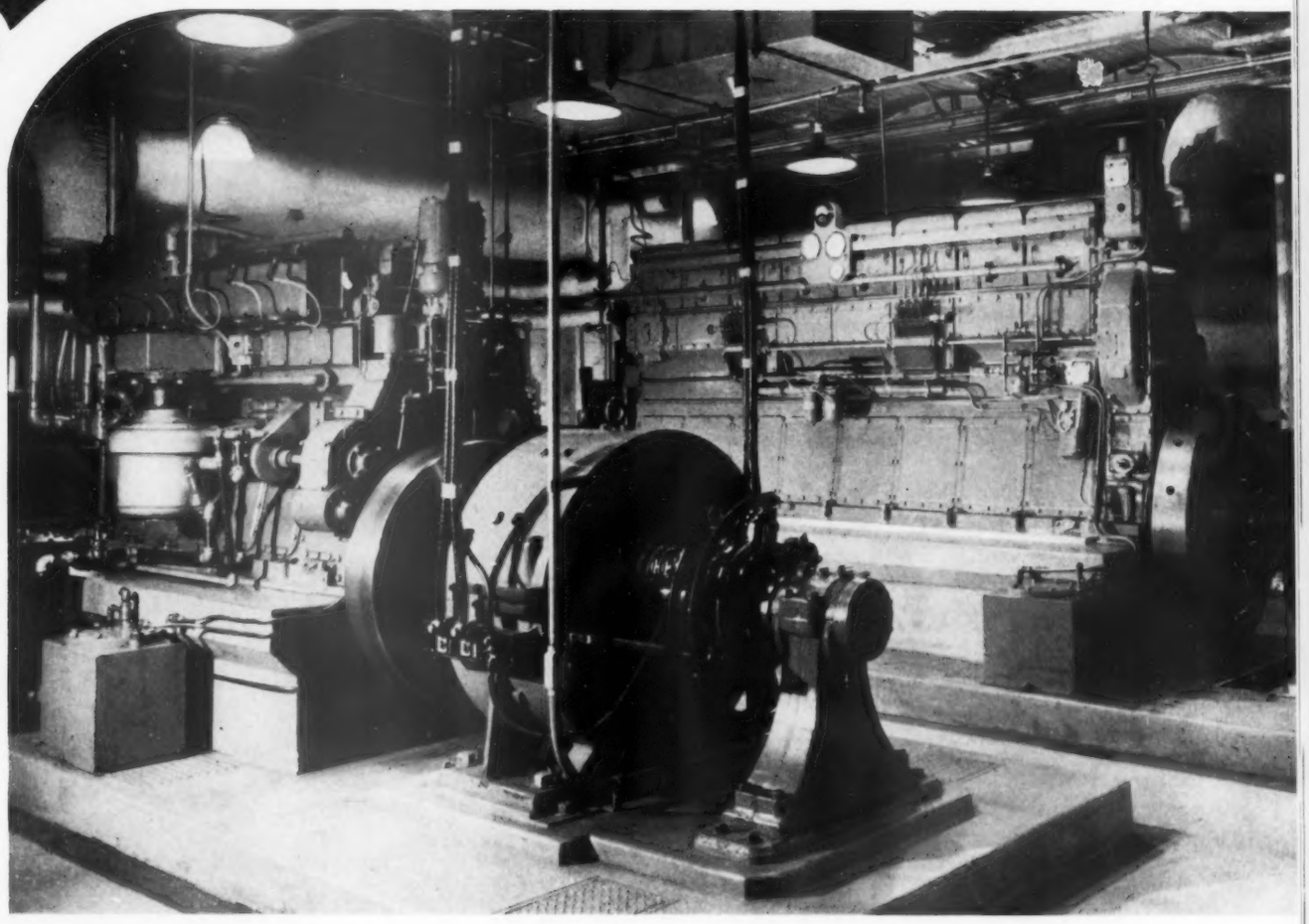
USE TAYLOR SPIRAL PIPE FOR:

- High and Low Pressure Water Lines.
- Low Pressure Steam and Air Lines.
- Steam and Diesel Exhaust Lines.
- Vacuum and Suction Lines.
- Blower Piping.
- Sand and Gravel Lines.
- Industrial Gas Lines.
- Oil and Gas Gathering Lines.
- Swing Pipe.
- Spray Pond Piping.
- Hydraulic Mining.
- Dredge Lines.

TAYLOR *Spiral* PIPE

● Other Taylor Forge Products include: WeldELLS and a complete line of other Seamless Steel Fittings for Pipe Welding; Forged Steel Flanges; Forged Steel Nozzles and Necks for boiler and other pressure vessel outlets; Heavy-wall Electric-Weld and Forge-Weld Pipe; Seamless Rolled Steel Rings; Corrugated Furnaces, and similar forged and rolled steel products.

A STEAM AND DIESEL TEAM!



The 6-cylinder Type EN Diesel and its 100-kw generator, and the 8-cylinder Type GN Engine which drives a 300-kw generator, in the Wm. R. Warner power plant. These engine-generator units augment a 300-kw steam driven unit. Eadie, Freund and Campbell, Consulting Engineers.

At the power plant of Wm. R. Warner Company, in New York, two Cooper-Bessemer Diesel Engine generator units have combined with a steam-driven-generator for a team that is producing results.

In one stroke, three old steam engines have been retired, more power obtained, power costs reduced, and dependable standby service secured. Noise limitation was imperative, and noise is noticeably absent. Parallel operation of the steam and diesel units was required, and the team is working together smoothly!

Another example of the adaptability and efficiency of Cooper-Bessemer Diesels!

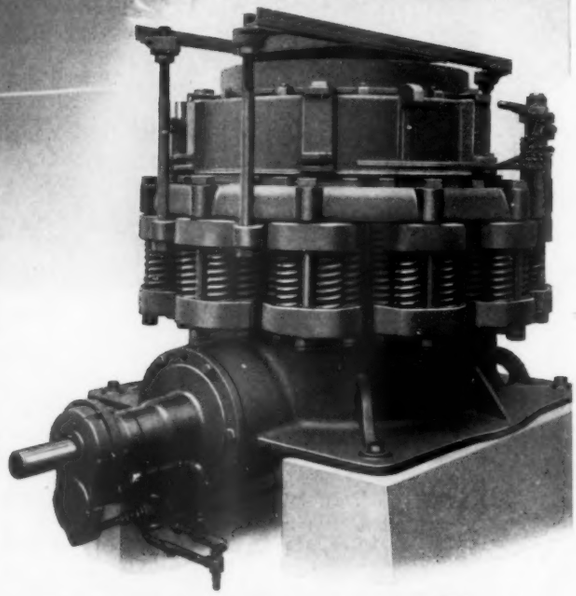
THE COOPER-BESSEMER CORPORATION

Mount Vernon, Ohio — PLANTS — Grove City, Pennsylvania

25 West 43rd Street, New York City
Investment Building, Washington, D. C.
529 M & M Building, Houston, Texas
640 East 61st Street, Los Angeles, California
201 East 1st Street, Tulsa, Oklahoma
Calmes Engineering Co., New Orleans, Louisiana
631 Spring Street, Shreveport, Louisiana
Magnolia Building, Dallas, Texas
1501 Arcade Building, St. Louis, Missouri

MORE AND MORE MINUS ½ INCH CRUSHING IS BEING DONE WITH *Short Head Cones*

Within the past few years, there has been a decided increase in the use of Symons Short Head Cones wherever fine crushing is being done in quantity. In the few states shown here, more than 70 are already in service. Most of these Short Heads have been installed to follow Standard Cones and to provide greater output of more finely crushed product than was possible with the original Cone installation. This combination of Short Head and Standard is ideal in meeting present day demands for capacity production of minus ½ inch materials. Only those sizes need be made for which there is immediate sale. Stock piling and later re-crushing of unsalable sizes are avoided.



If you are making products under ½ inch, make them more profitably by installing a Short Head Cone. Write us about your fine crushing problem and get the benefit of our experience in solving similar reduction problems on practically every type of material.

NORDBERG MFG. CO.
MILWAUKEE WISCONSIN
NEW YORK · LOS ANGELES · LONDON · TORONTO

NORDBERG MACHINERY

SYMONS CONE CRUSHERS

IN QUARRY HAULAGE:

What you don't know ~~won't~~ will hurt you

Above: EASTON TR-15H Semi-Trailer. Average payload 22-25 tons. Hydraulic body hoist optional. Two other sizes.

You're risking big money when you don't know where the pennies go . . .

Today's basic industrial aim is to equip, maintain, and move our fighting forces. Rock products industries rate highly in many phases of our complex war scheme. But in some cases we must be ready to accept weeks or months of waiting for new operating equipment.

We can help all-'round by planning far ahead for the procurement of essential new equipment, and by taking steps immediately to avoid waste of manpower, money or materials.

Today, more than ever, it is important to know where the pennies go . . .

How Easton Can Help You

An Easton Survey will provide you with an accurately scaled map of your quarry, including haulage routes, location of shovels, crusher, etc. With this map will be a tabular analysis of routes, equipment and capacity; a detailed time-and-cost study; and a summary of investments and depreciating periods based upon the most practical type of haulage for your service. These facts will help you to plan ahead for new equipment.

At the same time, this survey made by experienced quarry haulage experts, may point the way to immediate speed-ups and short-cuts with your present equipment. In some cases repairs might be made to put old equipment back into practical service.

An Easton Survey will incur no obligation on your part. For information write to Easton Engineering Counsel.

The famous EASTON Phoenix Quarry Car. Doorless. 2-way dump. Timken bearings.

Above: EASTON Won Way Car. Below: EASTON Cornwall Car. Both have automatic down-folding door, Timken bearings.

EASTON CAR & CONSTRUCTION COMPANY • EASTON, PA.

EASTON

TWENTY-FIVE YEARS OF SERVICE TO THE QUARRY INDUSTRY

Wickwire Rope helps London keep enemy aircraft above the Balloon Barrage—one of scores of Victory services performed by Wissco products.

A Message About Wire Rope

FROM LONDON'S BALLOON BARRAGE!

Here is a vital message written in steel upon the skies over London . . . where a single order for 587 miles of Wickwire Rope now adds its bit in protecting a great city from dive bombers.

Every foot of that wire rope is an eloquent argument in itself, speaking directly to every user of wire rope—whether used for war, or for essential civilian services.

The message is: VICTORY NEEDS *STEEL!* Victory needs night and day all-out efficiency in every industrial operation. Wire rope that fails too soon wastes steel. The time wasted replacing it is a red stop light on Victory.

You can speed Victory by using wire rope of the correct size and type for your service . . . *then by taking proper care of it, so that it lasts.*

The long life of Wickwire Rope begins with skillful production of the metal in our own blast furnaces. It continues through proud care and precision methods in drawing the wire, and laying the rope. Wickwire representatives give expert help in advising on the best type of rope for each use. And after delivery, Wickwire Service in the field continues to work with you, to assure longest life on the job.

• • •

Our authoritative "KNOW YOUR ROPES" manual, on the selection, application and usage of wire rope, has profited more than 25,000 rope users. Ask for your copy today. Write Wickwire Spencer Steel Company, 500 Fifth Avenue, New York, N. Y.

A FOOT OFF may make your rope last longer. Constant bending and unbending around a sheave will finally wear out any rope. A foot off the rope redistributes the wear. This and forty more rope life-savers are pictured and described in our booklet, "Know Your Ropes."

SEND YOUR WIRE ROPE QUESTIONS TO WICKWIRE SPENCER

WICKWIRE ROPE

Sales Offices and Warehouses: Worcester, New York, Chicago, Buffalo, San Francisco, Los Angeles, Tulsa, Chattanooga, Houston, Abilene, Texas, Seattle. Export Sales Department: New York City

WISSCO PRODUCTS

"THERE'S MORE Worth IN A WORTHINGTON"

Here's the Proving Ground

OREGON - SHIP-BUILDING YARD
MINNESOTA - OPEN CUT WORK
MARYLAND - HAGERSTOWN AIRPORT
LOS ANGELES PUBLIC UTILITIES
OHIO - NAVEMA ORDINANCE PLANT
VIRGINIA - NEW RIVER ORDINANCE PLANT

These are the Features that put "More WORTH in a Worthington."

ROCK DRILLS AND AIR TOOLS

DESIGN: Skilled, scientific designing results in low air consumption, high rate of penetration—and a tool that is easy on the operator.

QUALITY: Forged steel throughout, precision-made parts, and highest skilled workmanship guarantee ruggedness, long life and low maintenance.

SPECIAL FEATURES: In certain Drifters and Hand-Held Drills such exclusive Features as Independent Rotation, Pneumatic Feed and Hole Spotters result in lower cost per foot of rock drilled.

PORTABLE AND SEMI-PORTABLE COMPRESSORS

Worthington Compressors are designed for HEAVY-DUTY, MODERATE SPEED service resulting in maximum overall performance with long life and low maintenance cost. These benefits result from—

- TWO STAGE AIR COOLING
- FEATHER VALVE
- ARTICULATED CONNECTING ROD
- FORCE FEED LUBRICATION
- ENCLOSED CLUTCH
- SEALED CRANK CASE
- UNIT ASSEMBLY
- SIX-CYLINDER ENGINE
- SECTIONALIZED RADIATOR AND INTER-COOLER
- STRUCTURAL STEEL ALL-WELDED FRAME
- ROLLER BEARING WHEELS

From coast to coast, Construction and Quarry men are finding that Worthington Rock Drills and Air Tools use LESS AIR—that Worthington Portable Compressors deliver MORE AIR. It's a combination that is speeding their operations and lowering their costs. You, too, will find "More WORTH in a Worthington."

There is a Worthington Distributor or Branch Office in your area that will give you prompt local service.

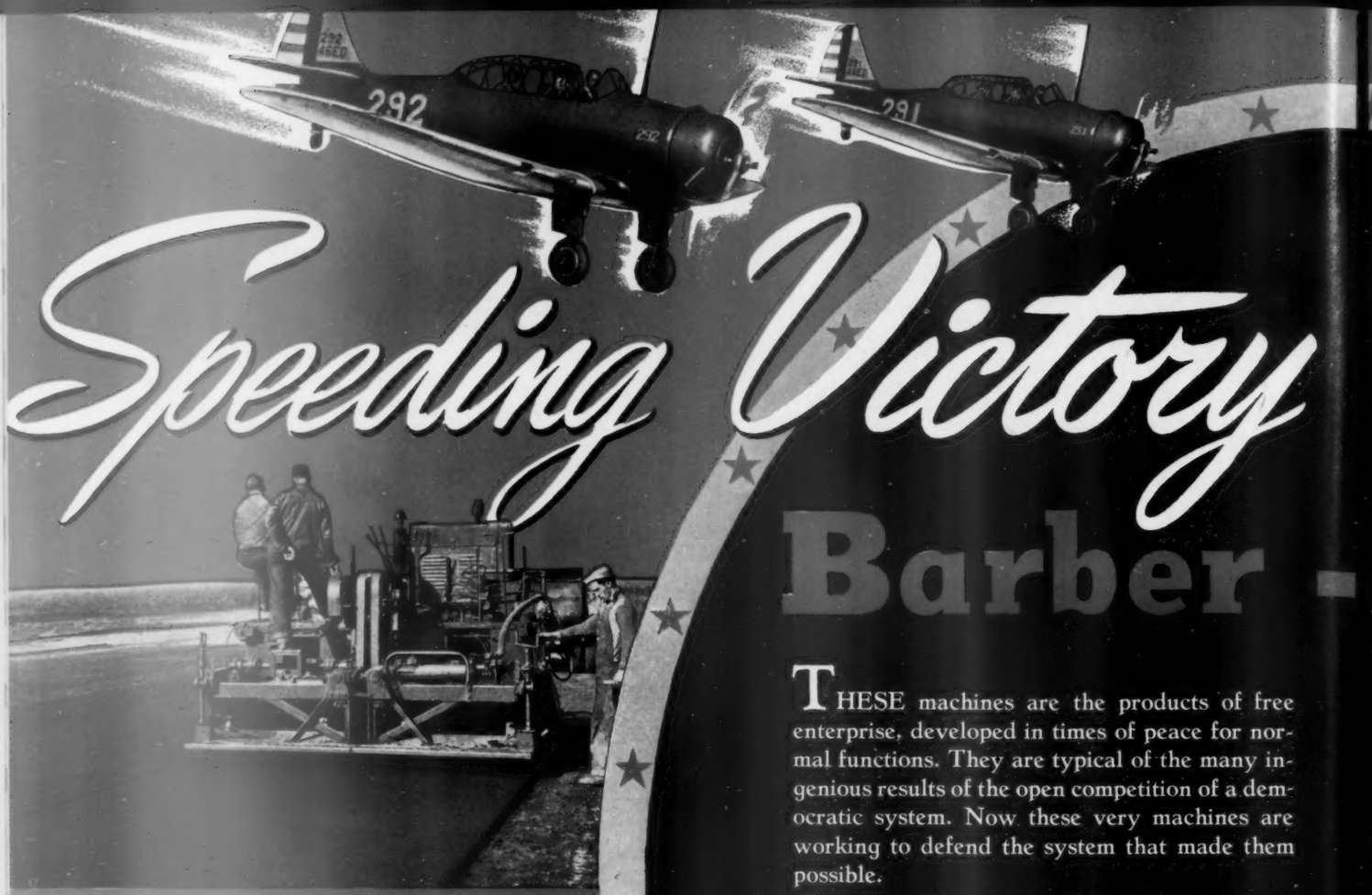
WORTHINGTON

WORTHINGTON PUMP AND MACHINERY CORPORATION, HARRISON, N. J.

Address Inquiries to

HOLYOKE COMPRESSOR AND AIR TOOL DEPARTMENT

HOLYOKE, MASSACHUSETTS PCI-6



Speeding Victory

Barber -

THESE machines are the products of free enterprise, developed in times of peace for normal functions. They are typical of the many ingenious results of the open competition of a democratic system. Now these very machines are working to defend the system that made them possible.

There is much more to defense than munitions . . . the building of camps, airports, roads, igloos

BARBER-GREENE COMPANY

B-G FINISHER laying runways for Martin Bomber Assembly Plant Airport, Fort Crooke, Nebraska. The B-G Finisher receives the asphalt mix from trucks, evenly spreads it, compacts it to a uniform density, and automatically lays a level surface even over an irregular sub-base.

B-G PORTABLE CONVEYOR stocking sorts loose material from which shells will be mixed. This conveyor is also used for handling concrete, aggregate, and many other bulk materials of the Defense program.

B-G SNOW LOADER clearing city streets at from 10 to 20 yards per minute. The Snow Loader has proven to be essential in the Defense producing areas.

B-G TRAVEL PLANT mixing sand asphalt for U. S. Navy at Saufley Field, Pensacola, Florida. It is delivering 3 cubic yards of mixed material per minute in this picture.

B-G "GOOSENECK" COAL LOADER. Many of these Barber-Greene units are in use at railroad and coal mine yards for handling coal and coke for locomotives and other boilers and furnaces in the United States and Canada.

B-G CAR UNLOADER. Many of these Barber-Greene units are in use for handling coal by the U. S. Quartermasters Corps. This Barber-Greene slips under the car and is practically automatic after being started.

with Greenes

—a thousand major products—requiring almost every commodity used in our normal life—now required in a sudden rush of multiplied quantities. The ingenuity and unequalled efficiency of American products combined with the American spirit is responsible for the rapid progress of the defense program—a spirit that is showing the difference between being pushed together, and pulling together.

AURORA, ILLINOIS, U. S. A.

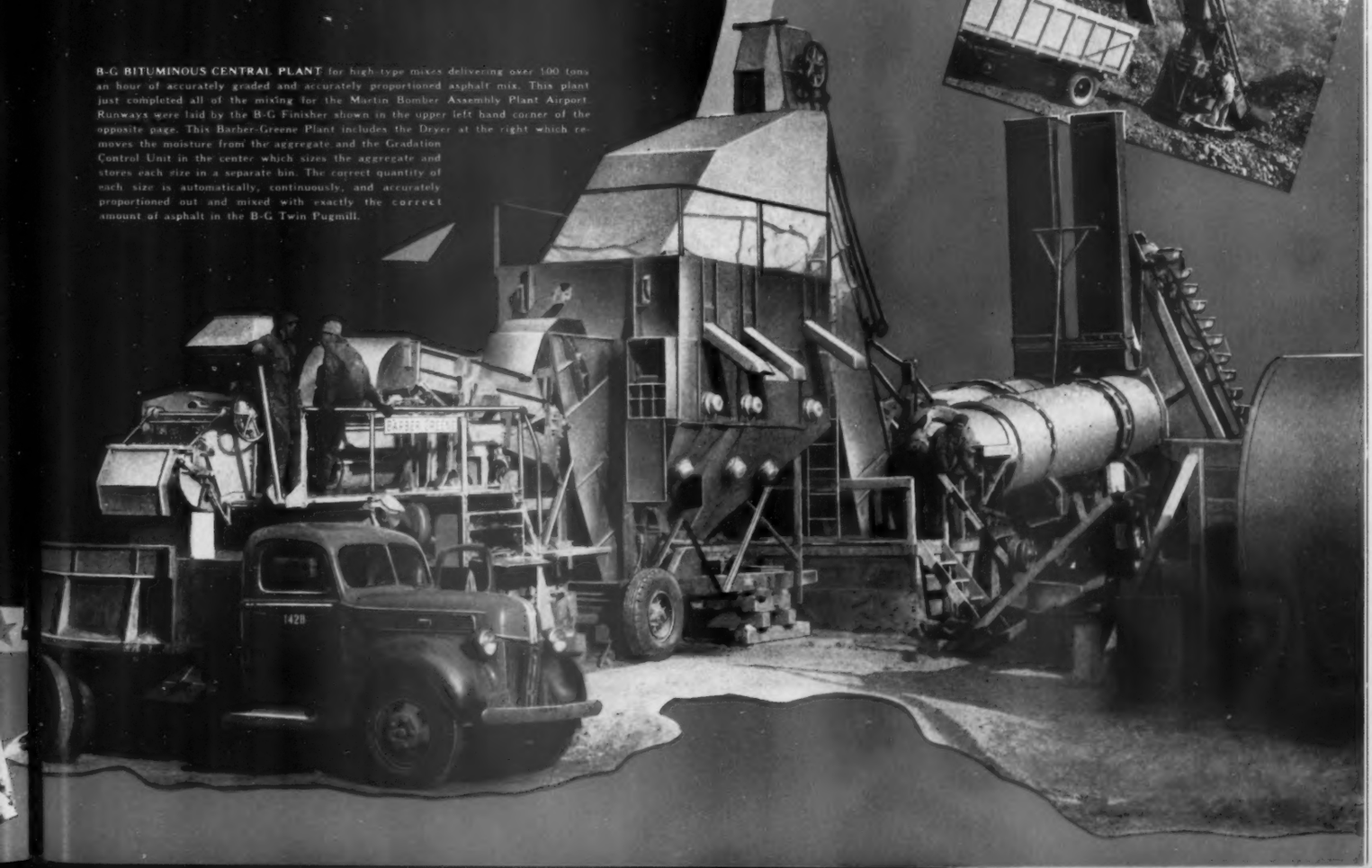
B-G DITCHER digging building foundations for Ordnance Plant at Ravenna, Ohio. This same machine is being used for cutting for the drainage, sewers, water, gas, and electric conduit.

B-G PERMANENT CONVEYORS are being used in many Defense Projects. This is a typical application elevating sand and gravel to a central screening plant and storing the various sizes.

B-G BUCKET LOADER This pneumatic tired Barber-Greene delivers 1½ yards per minute. The large B-G Crawler Mounted Bucket Loader has a capacity of over 2 cubic yards per minute.

B-G COAL LOADERS are speeding the loading of trucks at various military centers. This Barber-Greene is crawler mounted, and easily delivers over two tons per minute.

B-G BITUMINOUS CENTRAL PLANT for high-type mixes delivering over 100 tons an hour of accurately graded and accurately proportioned asphalt mix. This plant just completed all of the mixing for the Martin Bomber Assembly Plant Airport Runways were laid by the B-G Finisher shown in the upper left hand corner of the opposite page. This Barber-Greene Plant includes the Dryer at the right which removes the moisture from the aggregate and the Gradation Control Unit in the center which sizes the aggregate and stores each size in a separate bin. The correct quantity of each size is automatically, continuously, and accurately proportioned out and mixed with exactly the correct amount of asphalt in the B-G Twin Pugmill.



Page *Automatic* Buckets are on the Frontline

AS ALL AMERICA DIGS IN!

The American Excavation Industry is gallantly accepting today's challenge. The call is for S-P-E-E-D in production, all along the line.

On such essential projects as Island Bases, Cantonment Construction, Air Fields, etc., Page AUTOMATIC Dragline Buckets are living up to their reputation for faster digging and increased production . . . they're "doing their bit" with a vengeance!

Extra heavy demands are being made on all equipment manufacturers. We at the Page Engineering Company are sparing no effort to keep abreast of the requirements of the Industry.

May we ask your cooperation "for the duration" by, so far as possible, anticipating your needs for parts and new buckets. Please ORDER IN ADVANCE OF NEED, so that we may serve you better!

PAGE ENGINEERING COMPANY, CHICAGO, ILLINOIS

PAGE *Automatic* DRAGLINE BUCKETS

★ BOOST PRODUCTION ★ KEEP AMERICA STRONG ★

PMCO

WELDED DIPPERS

—make good shovels better

BETTER for digging heavy material, because the weight saved in the dipper allows heavy material to be handled without reducing dipper size.

BETTER for long reach shovels with extra long booms, because weight saved in the dipper allows a full size dipper capacity without increasing power or stress on the shovel structure.

BETTER capacity on regular shovels, because the weight saved in the dipper allows a larger dipper to be used and increases the pay load in some cases as much as 30%.

BETTER for structural strength in the dipper itself. Reinforced sections can be made extra strong to resist torsion in handling rock or lump material.

BETTER for special designed dippers, because the pattern cost is much less than with the solid cast type dipper.

These proven advantages are some of the reasons why today so many shovel engineers are using PMCO WELDED DIPPERS to MAKE GOOD SHOVELS BETTER.

We operate the largest and most complete manganese steel foundry in the United States

PETTIBONE MULLIKEN CORPORATION

4710 West Division Street, Chicago, Illinois

YES..! IN EVERY INDUSTRY LUBRIPLATE *SPEEDS* DEFENSE

On land—on sea—in the air—in every phase of industry vital to defense, LUBRIPLATE lubricants are doing jobs that are nothing short of amazing. From a smear on the worm screw of the naval officer's binoculars to a ton of LUBRIPLATE in the dredge underwater gear case—against friction and wear—thwarting rust and corrosion—conserving bearings and parts—LUBRIPLATE carries on.

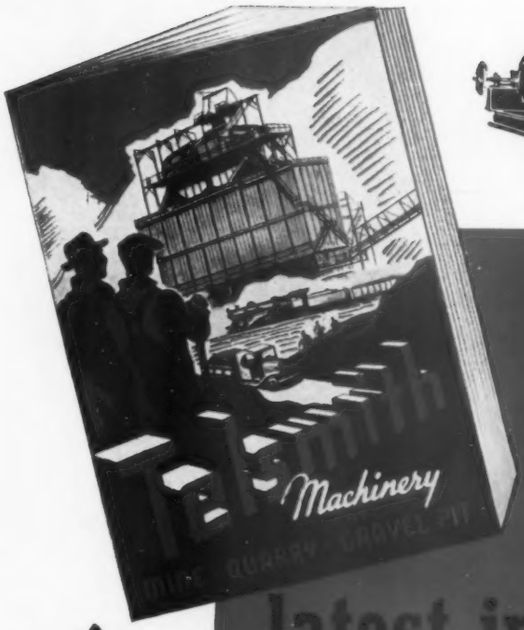
In spite of heat and high water—tractors and trucks rolling through muck and mud—spotless food packing machines constantly washed with scalding water—textile spindles whirling faster than ever before—marine equipment exposed to highly corrosive seawater and spray—LUBRIPLATE lubricants perform under conditions that would stop ordinary lubricants cold.

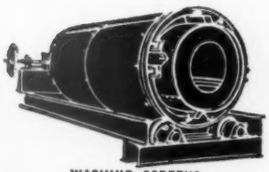
LUBRIPLATE DIVISION
FISKE BROTHERS REFINING COMPANY
SINCE 1870
Newark, N. J. Toledo, Ohio
DEALERS FROM COAST TO COAST

LUBRIPLATE

"Its the Film"

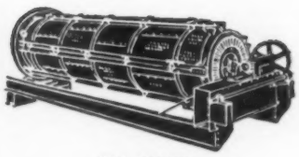
THE MODERN LUBRICANT *that Arrests Progressive wear*





WASHING SCREENS

PULSATORS



DRY SCREENS

New Edition

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You have to look ahead these days! Line up your equipment *now* . . . be all set to push your production to new peaks and bigger profits. This new 36-page illustrated equipment guide will help you . . . whether you're expanding or modernizing your present plant, or building a brand new one. It gives you the latest developments in rock, ore and gravel handling machinery. Shows you exactly how to pick the right type, model or size that will best fit your particular needs. *Ask for new Telsmith Equipment Guide E-15.*

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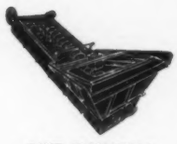
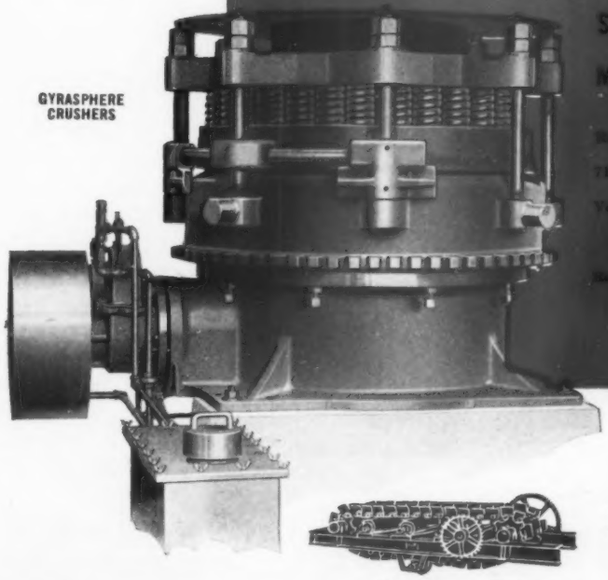
Wilson-Woomer-Wilkinson Co. Knoxville and Nashville, Tenn.
G. F. Seeley & Co., Toronto, Ont.

BELT AND BUCKET ELEVATORS

GRIZZLIES

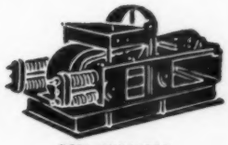


SAND CLASSIFIERS

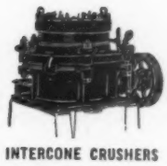


GYRASPHERE CRUSHERS

HEAVY DUTY FEEDERS



ROLL CRUSHERS



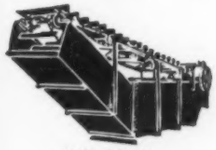
INTERCONE CRUSHERS

SUPER SCRUBBERS

SCREW REWASHERS

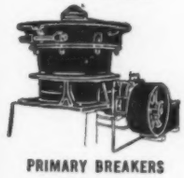
LOG WASHERS

SAND TANKS



SAND DRAGS

JAW CRUSHERS



PRIMARY BREAKERS

REDUCTION CRUSHERS

E-3

Keeps 'em Rolling

MORE OF THE TIME

TRADE MARK Reg. 353486

DEMPSTER DUMPSTER BuckeTrux

Keeps 'em Working

ALL OF THE TIME

Write for Information

WE'RE ON OUR WAY! . . . that's the cry throughout the country.

In every city and village . . . factory and farm . . . the people are demanding more *SPEED* in producing and delivering to the armed forces the munitions and materials of victory.

Many phases of this great effort depend upon hand l o a d i n g—and here the uniquely efficient DEMPSTER-DUMPSTER is playing a vital part.

These famous BuckeTrux on hundreds of jobs are keeping materials moving at maximum speed.

DEMPSTER-DUMPSTER is available in all types of detachable buckets, ranging in sizes of 2 to 8 cu. yds., and in capacities from 6000 to 12000 lbs.

DEMPSTER BROS., INC. KNOXVILLE TENNESSEE

The "RANGE" has proved this hard ROCK SHOVEL

EVERY miner knows the "Range" and every miner knows Butler Bros. When a firm with a reputation like theirs gives a repeat order, it means something—but when they order the same make, year after year, for work like that of the range every mining company in the market for a shovel ought to take notice.

Northwest Shovels have advantages found on no other make of shovel.

The Dual Independent Crowd utilizes force other shovels waste and turns it into added power for digging. The Cushion Clutch relieves the strain on all parts under power when shock loads are encountered. The "feather-touch" Clutch Control utilizes the power of the engine to throw heavy drum clutches and reduces day-end fatigue. Northwest booms withstand the shocks of rock digging and remember, no shovel boom of Northwest design and construction built since 1932 has ever failed—a nine year record!

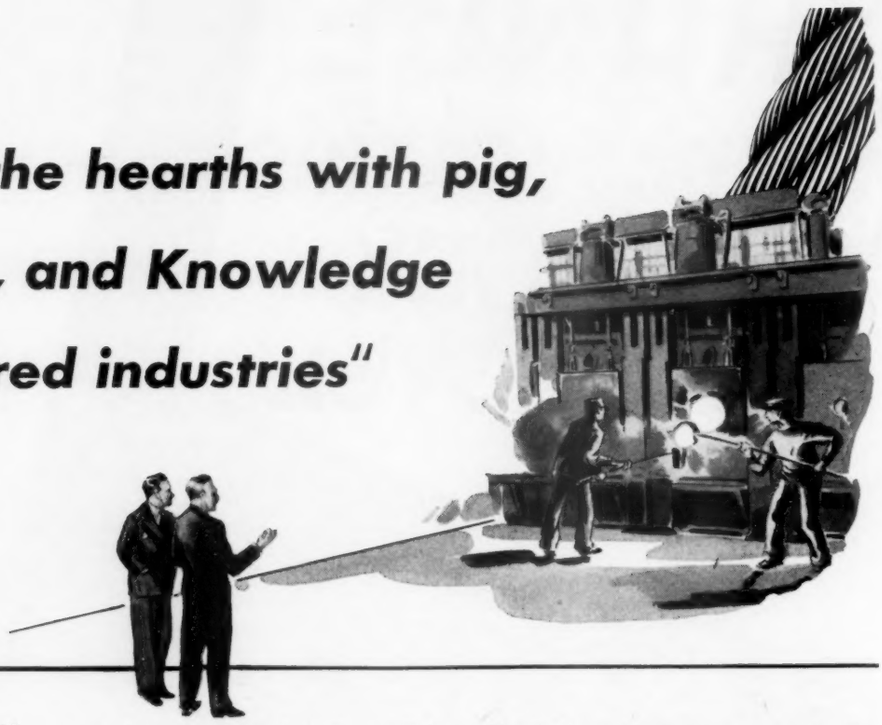
NORTHWEST ENGINEERING COMPANY
1822 Steger Building, 28 E. Jackson Blvd., Chicago, Illinois

BUTLER BROS. have bought their fifth NORTHWEST

If you have a real rock shovel, you won't have to worry about output in any digging!

NORTHWEST

'You charge the hearths with pig, and scrap, and Knowledge of a hundred industries"



For this is Roebling "Blue Center" Steel

"It's fired for many hours before it's ready to pour, and during the better part of two shifts you put into it many things. Some are ingredients that anyone can use in open hearth steel. And some are not . . .

As the empty hearth begins to glow, you lay your silica bottom. You're making "Blue Center" steel, and it calls for purer raw materials. Good pig, selected scrap and plate.

Long daytime hours and nighttime hours of firing, and at their end, the one right moment when the steel is ready to pour. When is that moment? Shake hands with Andrew Fors, one of those whose eyes since 1906 have been an ingredient of Roebling ingots. Now he's passing his melter's skill on to his son at Roebling. Yes, skilled eyes and eyes alone can tell when the melt is ready. There is no other way . . .

There goes another strange ingredient in. That melter's taken out a sample, to put back something bigger...Knowledge, from the Roebling laboratory and field. Knowledge of a hundred industries, and steel that will exactly meet the needs of each. Every melt's a special melt — right for aircraft control cord, or elevator cable, or factory cranes . . . right for tugboat hawsers, or mine hoists, or oil well drilling lines.

That's the only way you can make the steel we use in "Blue Center" Wire Rope. You start right with the way the ingot's made . . . to meet its job right from the first. We call it "tailored steel", and it's worthy of the Roebling Trade Mark, from the time it leaves the open hearths . . ."

JR ROEBLING

Knowledge of men in the Roebling mills, of Roebling men in the field . . . Roebling process control and engineering and research . . . there's many a hidden ingredient in "Blue Center" Wire Rope. Reasons why it lives so long, and never fails to deliver its full measure of service.

JOHN A. ROEBLING'S SONS COMPANY
TRENTON, NEW JERSEY
Branches in Principal Cities

THAT'S THE ONLY WAY TO MAKE

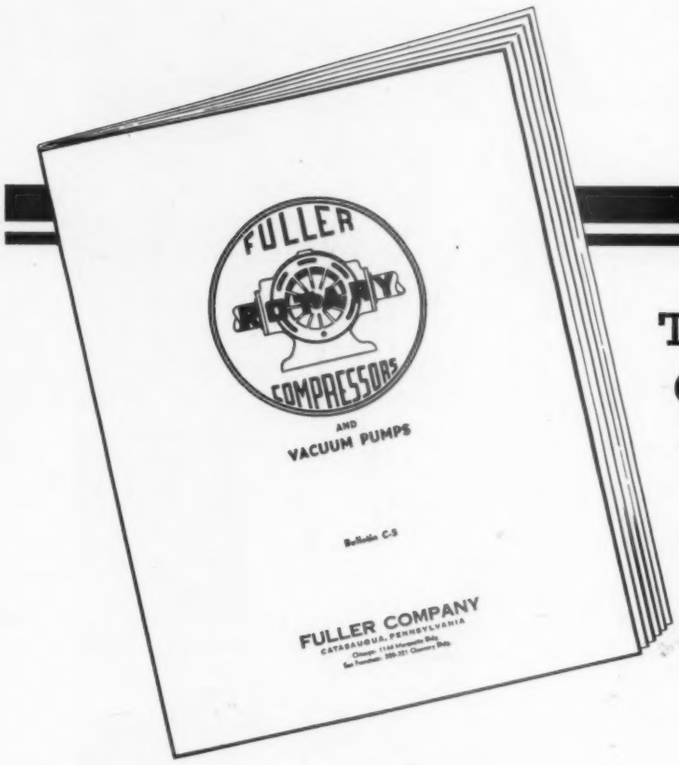
ROEBLING

"Blue Center"

STEEL WIRE ROPE
PREFORMED OR NON-PREFORMED

FULLER ROTARY COMPRESSORS AND VACUUM PUMPS

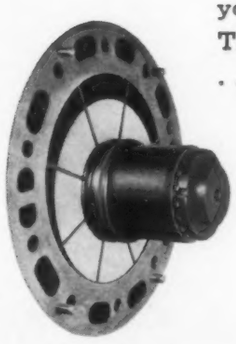
ARE DESCRIBED
IN THIS NEW BULLETIN



THIS BULLETIN JUST OFF THE PRESS . . .

OF SPECIAL INTEREST TO SUPERINTENDENTS AND MAINTENANCE MEN LOOKING FOR LOW-COST OPERATION.

If you are interested in compressed air or gases, capacities to 1800 c.f.m. actual free-air delivery, pressures to 125-lb. —vacuums to 29.90 in., (referred to 30 in. barometer), you should investigate these highly efficient machines. This new bulletin illustrates and describes these units . . . send for your copy today . . . just fill in the coupon.



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Catasauqua, Pa.

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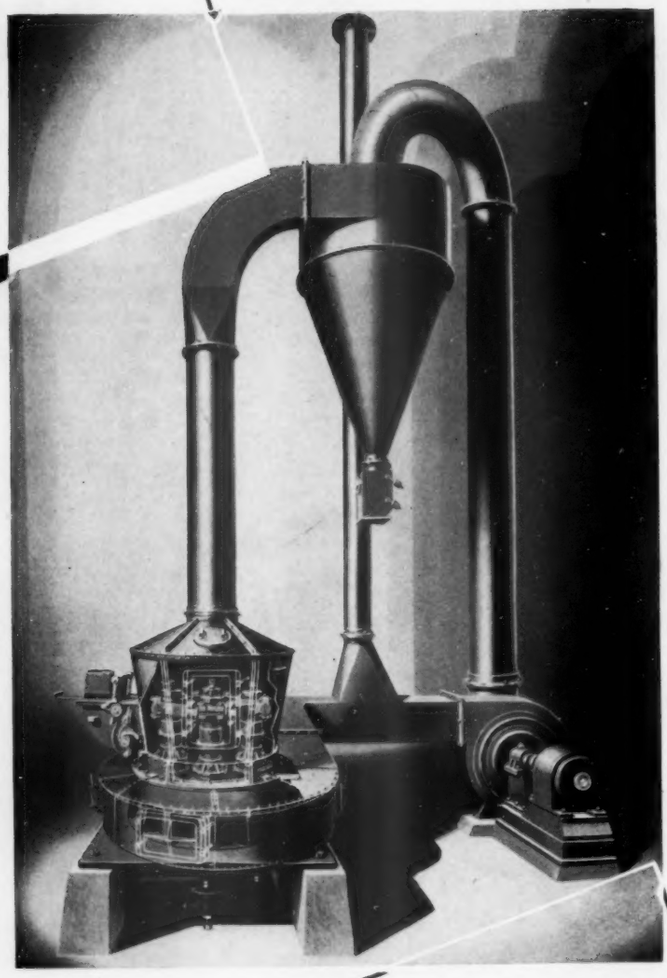
C-65

FULLER COMPANY

CATASAUQUA — PENNSYLVANIA

CHICAGO—Marquette Bldg. SAN FRANCISCO—Chancery Bldg.

GYPSUM GRINDING costs less with Raymond LOW SIDE ROLLER MILL



. . . because this sturdy pulverizing unit is built for big capacity and sustained production, requiring low power consumption per ton of product.

The large surface area of the grinding elements . . . the free, unrestricted air passages through the separator . . . and the pneumatic feed control that maintains a maximum load on the mill . . . all contribute to increased output.

The new type spider vanes, revolving above the grinding chamber, are effective in obtaining better product uniformity without sacrifice of capacity. The self-lubricating oil journals, high grade bearings, and finely balanced construction, all result in extremely low operating and maintenance costs.

In a recent installation, the Raymond Low Side Roller Mill is pulverizing crude gypsum rock at 86% fineness through 100-mesh, producing 12 tons or more per hour.

On another job, a Low Side Mill is handling two grades of gypsum rock. It delivers from 15 to 17 tons per hour, averaging 44% higher output than the former mill.

For grinding non-metallic minerals to commercial fineness . . . 60% to 95% minus 100-mesh . . . it pays to use the modern Raymond Low Side Roller Mill.

For extreme fine grinding problems, ask for details of the Raymond High Side Roller Mill.

An economical producer for grinding gypsum, limestone, barytes, bentonite, phosphate rock and similar non-metallic minerals to 100-mesh fineness.

The Modern Raymond

LOW SIDE ROLLER MILL

RAYMOND PULVERIZER DIVISION
COMBUSTION ENGINEERING COMPANY, INC.
1321 North Branch Street **CHICAGO**
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PIT AND QUARRY

Vol. 34 FEBRUARY, 1942 No. 8

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The double eddy (an air current phenomenon present in all cyclone-type dust collectors) is a mischief-maker for everyone but Buell—causing trouble, cutting down efficiency. The reason? *No one but Buell can use the van Tongeren Cyclone!* This patented system embodies the only known method of harnessing the energy of the double eddy current to increase collection efficiency *on all dust sizes.*

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7 Companies Facing Fraud Charges Over Arms-Plant Awards

A suit charging that seven construction, material and trucking firms had defrauded the government by excessive prices and "kickbacks" on contracts for the $100,000,000 St. Louis small-arms ammunition plant has been filed in federal court at St. Louis by David Houlle in behalf of the government. The suit was instituted under a law permitting a private citizen to seek recovery of money alleged to have been obtained from the government by fraud.

Mr. Houlle is said to have been in the gravel business. His attorney estimated a million dollars was involved in the suit.

The defendants are the Fruco Construction Company, Fruin-Colnon Contracting Company, Columbia Quarry Company, Big Bend Quarry Company, Fred Schmitt Material Company, Missouri-Illinois Material Company and Arrow Trucking Company, all of St. Louis.

Road Builders to Meet at Memphis March 2

The 1942 convention of the American Road Builders Association will be held in Memphis during the week of March 2, according to an announcement made recently by Charles M. Upham, engineer-director of the association.

The convention and annual show were originally scheduled for Chicago and later cancelled because of war conditions. There will be no display of equipment at Memphis.

Award Contracts for Another Ordnance Job

The Van Camp Sand & Gravel Company, Morrow, Ohio, will supply the aggregates and the Richter Concrete Corporation of Cincinnati the ready-mixed-concrete for the erection of the Kings Mills Ordnance Plant, located in Warren County, Ohio.

Construction on the project was started January 14, 1942 by the general contractor, the Ferro-Concrete Construction Company of Cincinnati.

The Van Camp gravel plant is located but 6 miles from the site of the work.

American Rock Wool Co. Buys Cleveland Plant

Acquisition by the American Rock Wool Company of the W. G. Poe six-cupola mineral-wool plant in Cleveland makes the concern one of the leading producers of this commodity in the world. A new $500,000 plant is also starting operations at Red Wing, Minnesota.

James R. Addington heads the concern which has been in existence since December, 1934.

Mining Congress Will Meet in Cleveland

The annual meeting of the American Mining Congress will be held at the Statler Hotel, Cleveland, on February 6, according to an announcement by Julian D. Conover, secretary.

Members from all parts of the country will attend and sessions of the meeting will be devoted to discussions of policies for the coming year and the many problems of the mining industry in meeting war-time requirements.

Cowell Company Offers Hospital for War Use

Use of the Cowell Hospital in case of a disaster emergency has been offered to physicians and surgeons working under the civilian defense program by officials of the Cowell Portland Cement Company of Cowell, California.

The hospital, already equipped, was formerly operated by the cement company but has not been used in years.

Forecast 25% Gain in Car-Loadings for Sand, Gravel, Stone

An increase of 25.2 per cent. in car-loadings of gravel, sand and stone during the first quarter of 1942 over the corresponding period a year ago is forecast on the basis of estimates compiled by the thirteen regional Shippers' Advisory Boards. It was estimated that such car-loadings will reach a total of 330,687 in the initial quarter of 1942, as against 264,039 actual car-loadings in the same 1941 period.

Car-loadings of cement are expected to increase 11.2 per cent., from 105,140 in the first quarter of 1941 to an estimated 116,961 in the initial quarter of 1942. Brick and clay products are expected to show a rise in car-loadings of 12 per cent., from 60,417 to 67,671, while car-loadings of lime and plaster are expected to rise 6.1 per cent., from 37,751 to 40,053.

Cancel Wichita Road Show Because of War

Due to conditions that have arisen from the defense program and declaration of war, the Annual Southwest Road Show and School, and the Annual Western Tractor and Power Farm Equipment Show scheduled for February 24 to 27, 1942 at Wichita, Kansas, have been postponed indefinitely.

Public-Works Building Expected to Cease

Deferment of all federal public-works expenditures not directly connected with the war was recommended recently by a joint Congressional-executive committee.

The committee, which was set up under last September's tax bill, estimates that over $1,600,000,000 in non-defense spending would be effected by such a move.

Coming Events

February 2-4, 1942 — Kansas City. Regional meeting, National Concrete Masonry Association. Muehlebach Hotel.

February 2-5, 1942—Cincinnati. Annual convention, National Crushed Stone Association. Netherland Plaza Hotel.

February 16-18, 1942—Atlanta. Regional meeting, National Concrete Masonry Association, Atlanta-Biltmore Hotel.

March 2-6, 1942 — Memphis. Annual convention, American Road Builders Association.

April 18-24, 1942—Cleveland. First Western Hemisphere Foundry Congress, Cleveland Auditorium.

May 26-28, 1942—Hot Springs, Virginia. Annual convention, National Lime Association, The Homestead.

June 9-11, 1942 — Cleveland. Annual convention, National Concrete Burial Vault Association, Hotel Cleveland.

June 22-26, 1942 — Atlantic City. Annual convention, American Society for Testing Materials.

Hold Illinois Minerals Conference in October

Dr. M. M. Leighton, chief of the Illinois State Geological Survey, announces that the 1942 Illinois Mineral Industries Conference will be held at Urbana, Illinois, on Friday and Saturday, October 30 and 31.

Separate sessions will be devoted to discussions of researches and problems involving the state's coal industry, oil and gas exploration and development, the clay and clay-products industry, and the rock and stone-products industry, including fluorspar.

In view of the uncertainties engendered by the fact that the country is involved in war, the general theme of the conference will be determined at a later date, in order that it may be of the utmost timeliness and interest.

The conference will be sponsored jointly by the Illinois State Geological Survey, which is a division of the State Department of Registration and Education, the Engineering Experiment Station of the University of Illinois, and the Illinois Mineral Industries Committee. National professional societies, trade associations, scientific research organizations and leading educational institutions will coöperate and will be represented by delegates.

The Portland-cement industry in November, 1941, produced 14,931,000 barrels, shipped 13,724,000 barrels from the mills, and had in stock at the end of the month 17,624,000 barrels of cement, according to the Bureau of Mines. Production and shipments in November, 1941, showed increases of 17.3 and 32.3 per cent., respectively, as compared with November, 1940. Portland-cement stocks at mills were 13.4 per cent. lower than a year ago.

Mysterious Blast Hits Wisconsin Silica Plant

An explosion and fire caused estimated damage recently of $150,000 to the plant of the Browntown Silica Company, Browntown, Wisconsin. P. W. Palmer, who owns the plant with his brother, J. E. Palmer, notified the F.B.I. office at Milwaukee that he suspected sabotage. Mr. Palmer said he could not conceive of an explosion at the plant unless a bomb had been set off.

The plant, which has been employing about 25 men, was re-opened about two years ago after several years of idleness. Plans had been completed to increase production. The Palmers also own the Hartland-Verona Gravel Company and the Hartland Sand & Gravel Company.

Eleven Producers Share County Gravel Contract

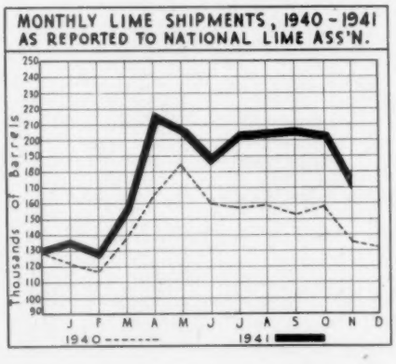
When the county commissioners of Allen County, Indiana, opened bids at Ft. Wayne for gravel for county roads during 1942 they found that there were eleven companies bidding. Contracts were divided among the group.

A contract for 20,000 tons of crushed stone was also awarded to the Erie Stone Company and one for 10,000 tons went to the Union Quarries Company.

Mark 75th Anniversary of Saylor's Patent

A souvenir booklet, marking the 75th anniversary of the American Portland-cement industry, has just been issued by the Coplay Cement Manufacturing Company, Coplay, Pennsylvania.

The booklet pays tribute to the imaginative foresight of its founder, David O. Saylor, who obtained the first patent for the manufacture of Portland cement in this country in 1871.



According to data collected by the National Lime Association, 71 companies in November, 1941, shipped 169,322 tons of lime (118,020 quicklime; 51,302 hydrate). Reporting companies represent 47.2 per cent. of the association's total capacity of record. Based on PIT AND QUARRY'S estimates for the remainder of the industry, the total shipments for the month by all plants were approximately 420,000 tons. Shipments of lime by uses for November, 1941, were:

Use	Quicklime (tons)	Hydrate (tons)
Agricultural	509	3,278
Building	16,366	27,638
Chemical	101,145	20,386
Total	118,020	51,302

Building Contracts Last Year Highest Since 1928—Dodge

For the first time since 1928, building and engineering contracts awarded last year in the 37 eastern states topped the six-billion dollar mark. The 1941 total for those states, as compiled by F. W. Dodge Corporation from its daily field reports, was $6,007,474,000, compared with $4,003,957,000 in 1940, the previous record year of the post-depression period.

The most spectacular increase took place in the building of new manufacturing plant capacity, for which contracts in 1941 reached the record-breaking total of $1,181,523,000, a figure that excludes all processing machinery. This was more than two and a half times the 1940 volume of $442,424,000, and exceeded greatly the previous record year 1920, which had, at much higher cost levels than are currently prevalent, a total of $635,168,000. This increase in manufacturing buildings, coupled with a 48 per cent. increase in commercial building and with a very moderate increase in public and institutional buildings, produced a 1941 non-residential building total of $2,315,671,000, which was 78 per cent. more than the corresponding 1940 figure.

Residential building contracts last year reached a total of $1,953,801,000, largest since 1928, and 22 per cent. greater than the 1940 figure. Single-family houses increased 37 per cent. in number and 33 per cent. in total cost over 1940; two-family houses doubled in number and total cost; multiple dwellings slipped backward to the extent of a 29 per cent. decrease in dollar volume and a 24 per cent. decrease in new family units, as compared with the previous year. Heavy engineering contracts (public works and utilities) reached a total of $1,738,002,000, compared with $1,112,373,000 in 1940.

Commenting on the 1941 construction record, Thomas S. Holden, president of F. W. Dodge Corporation states: "This post-depression record volume was compounded of a large defense construction program and, up to last September, a rapidly mounting volume of public and private non-defense construction. According to government estimates about 40 per cent. of the total 1941 construction program was for defense construction. The 1942 program is presently estimated to equal in total dollar volume that of 1941, with a vastly increased war construction program, volume of civilian construction curtailed to absolute essentials and an approximately normal volume of maintenance and repairs. Seventy-five to 80 per cent. of this year's total volume will be war construction, quite widely distributed throughout the country. Being thus called upon to produce greatly expanded facilities for Army, Navy, air force, war production and war housing, construction becomes in 1942 one of the country's leading war industries. During recent months, successive priority rulings and orders curtailing non-defense construction have channeled the industry's capacity into its war job and prepared it to meet the task assigned to it."

Universal Atlas Had Few 1941 Accidents

The Universal Atlas Cement Company reports that its nine plants had only 18 lost-time accidents in 1941, and three of these plants—Northampton, Pennsylvania, Leeds, Alabama, and Duluth, Minnesota—went through the entire year without a lost-time accident. The last lost-time accident at the Leeds plant was on February 22, 1939, so that up to January 1, 1942, it has operated for 1,043 consecutive accident-free days.

This qualifies these three plants for a re-award of the Portland Cement Association safety trophy. Each of them, and each of the other plants has previously won this award, at least twice. Since 1925 the nine plants have qualified for the trophy 39 times.

Quarry Operator Sues State for Damages

First of two claims against the State of New York filed by Ryan Stone Company Inc. of Albion for a total of $63,373 for alleged damage to its quarry through seepage of water from the Barge Canal and loss of use of the property for parts of two years was heard in the Court of Claims recently, at Rochester.

The claim brought to trial first is for $12,883, involving damage said to have occurred between September 26 and November 14, 1938. Awaiting trial is a similar claim for $50,490 for the period April 15 to November 15, 1940. According to officials of the Ryan concern and other quarry owners, canal waters flood various properties each year because of blasting operations of the state in deepening the canal from 1911 to 1914.

Fire caused considerable damage recently at the Cheraw, South Carolina sand-and-gravel plant of the Becker County Sand & Gravel Company.

The plant had been supplying 50 to 75 carloads of material daily to government defense projects in that area.

$137,500,000 Approved for Federal Aid; War Needs to Come First

Acting for Federal Works Administrator Philip B. Fleming, Assistant Administrator Baird Snyder has apportioned to the states $100,000,000 for improvement of the Federal-aid Highway System, $17,500,000 for secondary roads, and $20,000,000 for the elimination of hazards at railroad grade crossings.

These funds are for the fiscal year beginning July 1, 1942. They were authorized by the Federal Highway Act of 1940 and are reduced by deductions authorized for administrative expenses. It is required by law that the apportionment be made on or before January 1, 1942.

In making the apportionment Mr. Snyder emphasized that it will be the policy of the Federal Works Agency to restrict the approval of projects to those essential to national defense as certified by the appropriate Federal defense agencies.

Improvement of sections of highway that have been found to be inadequate for the greatly increased volume of defense traffic, strengthening or replacement of weak bridges on main highways, and improvements desired by defense officials in connection with planned operations will make up the program.

All work will be done in coöperation with the state highway departments according to the usual Federal-aid procedure except that projects will be limited to those having a definite defense significance.

U. S. Gypsum Sponsors Huge Farm Experiment

Establishment of one of the world's largest experimental farm laboratories is announced by the United States Gypsum Company. A total of 17,351 acres is included in 99 farms of various types.

Test projects will be run on these typical farms to show how production can be increased. These tests will show the advantages of various types of buildings and building improvements, fire protection. home decoration, soil conservation, diversification of crops, breeding, sanitation and marketing. This information will be passed on to the farmers of the country to help make their farming more profitable and their farms more livable.

The farms are being run by owners and tenants who are continuing their normal, every-day farming operations. The Doane Agricultural Service is being retained as counsel.

Division of Overtime Is Upheld by Another U. S. Circuit Court

In an opinion delving deeply into the social and economic aims of Congress in adopting the Fair Labor Standards Act, the United States Circuit Court of Appeals for the Fourth Circuit upholds the Wage and Hour Division, U. S. Department of Labor, in its interpretation of the overtime provisions of the act.

The opinion, announced January 11 by Thomas W. Holland, Administrator of the division, is the second Circuit Court opinion upholding the division in its interpretation that overtime pay must be at the rate of time and one-half the employee's regular hourly rate—not merely time and one-half the minimum rate under the act.

Reversing the decision of Judge William C. Coleman, in U. S. District Court at Baltimore, Maryland, the Fourth Circuit Court opinion directs the lower court to enter judgment for William H. Missel against the Overnight Motor Transportation Company, Inc., of Baltimore, which employed him as a dispatcher. Judge Coleman held that Missel was entitled to only time and one-half 30 cents per hour, the minimum rate of pay under the act, despite the fact that his weekly wage was on a basis higher than that figure.

The Circuit Court opinion, in disallowing the lower court's interpretation of the overtime provisions (Section 7(a)) of the act, said:

". . . the court below adopted a 'minimum-wage' theory of Section 7(a) and consequently concluded that the overtime provisions of the act are satisfied by the payment of one and one-half times the statutory minimum rate for each overtime hour—'regular rate' and 'minimum rate' becoming synonymous.

"This interpretation makes the overtime provisions of the act effective only as to employees in the lowest wage brackets. Since we have adopted a 'maximum hour' interpretation of Section 7(a), it follows as the night the day that we must reach a different conclusion.

"We think it is clear that 'regular rate' of pay means the *actual* rate of pay which the employee is receiving, no matter how high, and not the minimum rate set forth in the statute.

"We are unable to agree with the lower court that the primary purposes of the Fair Labor Standards Act are satisfied by the payment of time and one-half the statutory minimum wage for overtime. Furthermore, we do not believe that Section 7(a) is merely part of a broad scheme of minimum wage regulation."

Referring to Congress' aim in adopting the act, the Circuit Court opinion states:

"It seems plain from the legislative history of the act that, in addition to attempting to establish a decent national level of working conditions, one of the fundamental purposes of the act was to induce worksharing and relieve unemployment by reducing hours of work. . . . One of the impelling forces behind the act is the effort to promote economic stability through increased purchasing power.

"These purposes of the act are accomplished because the overtime provisions of the act, requiring employers to pay an extra bonus or penalty for such work, distinctly tend to discourage overtime. This is on the theory that the overtime rate established by the act will be sufficiently expensive to compel employment of new men, and that employers, rather than pay overtime, will spread employment."

With reference to the Wage-Hour Division's interpretations, the Circuit Court pointed out that "both interpretative bulletins issued by the Wage and Hour Division and regulations have interpreted 'regular rate at which he is employed' to mean the actual rate the employee is receiving and not the statutory minimum. Although such interpretations are by no means binding on the courts, we consider them highly significant."

While in accord with the opinion of the Circuit Court for the Sixth Circuit, which declared the division's interpretation of the time and one-half provisions of the act to be the "unmistakable meaning" of the act, the opinion announced January 11 takes decided issue with parts of the opinion of the Fifth Circuit Court, in *Fleming* v. *A. H. Belo Corp.* publishers of *The Dallas Morning News.*

In its reference to this opinion, the Fourth Circuit Court states:

"We are unable to agree with the Circuit Court of Appeals for the Fifth Circuit that the overtime provisions of the act are merely part of a scheme to raise substandard wages. Rather we conclude that the purpose of Section 7(a) is to eliminate long hours of labor by requiring employers to pay extra compensation for overtime work. Otherwise the guarantees of the act become 'only a promise to the ear to be broken to the hope, a teasing illusion like a munificent bequest in a pauper's will.'" (The quotation is from an opinion by Justice Jackson of the U. S. Supreme Court in *Edwards* v. *California.*)

The *Fleming* v. *A. H. Belo Corp.* case now is before the U. S. Supreme Court and, as the Fourth Circuit Court opinion points out, "It is estimated that the eventual outcome of this case will have a powerful impact and profound effect on many million 'white-collar' workers getting more than the statutory minimum wage."

Administration Brands Discharge of Aliens as Stupid and Unjust

OPM Associate Director-General, Sidney Hillman, has sharply condemned the reported practices of some employers in discharging workers who happen to be aliens or foreign-born citizens.

At the same time he called the attention of both workers and employers to a statement by President Roosevelt on January 2, branding such a policy "as stupid as it is unjust."

Pointing out that the questions of labor supply and skilled manpower constitute one of the nation's largest problems in achieving all-out war production, Mr. Hillman declared that such a policy of discrimination not only works against national interest, but also may inflict an injustice on workers who are thoroughly loyal and patriotic.

"Americans are Americans," Mr. Hillman said, "not because of their ancestry or birthplace, but because they believe and support what America stands for in freedom, intolerance, in justice. Every American who loves freedom should be given full opportunity to share in its defense. Nor should we deny that opportunity to citizens of other nations, now under Nazi rule, who are eager to work toward America's victory and thereby help restore freedom to their own peoples."

Mr. Hillman referred to President Roosevelt's statement that "by discharging loyal and efficient workers simply because they have 'foreign-sounding' names, or by refusing to employ such men and women, employers are engendering the very distrust and disunity on which our enemies are counting to defeat us." The President, as Commander-in-Chief of the Army and Navy, emphasized that there is no law prohibiting the employment of aliens except in special defense work of a secret nature, and even in such work, the employer may hire an alien with the permission of the Army or Navy, depending on the contract.

Mr. Hillman also quoted Attorney

General, Francis Biddle, who recently declared that "No more short-sighted, wasteful or un-American policy could possibly be adopted at this time than that of barring non-citizens from legitimate private employment." Mr. Biddle reminded employers that "of our total non-citizen population of about 5,000,000, fewer than 3,000—six out of ten thousand—have been regarded as dangerous to the peace and safety of the United States. These have been taken into custody by the Federal authorities."

STATEMENT BY THE PRESIDENT

"I am deeply concerned over the increasing number of reports of employers discharging workers who happen to be aliens or even foreign-born citizens. This is a very serious matter. It is one thing to safeguard American industry, and particularly defense industry, against sabotage; but it is very much another to throw out of work honest and loyal people who, except for the accident of birth, are sincerely patriotic.

"Such a policy is as stupid as it is unjust, and on both counts it plays into the hands of the enemies of American democracy. By discharging loyal, efficient workers simply because they were born abroad or because they have 'foreign-sounding' names or by refusing to employ such men and women, employers are engendering the very distrust and disunity on which our enemies are counting to defeat us.

"Remember the Nazi technique: 'Pit race against race, religion against religion, prejudice against prejudice. Divide and conquer!'

"We must not let that happen here. We must not forget what we are defending: liberty, decency, justice. We can not afford the economic waste of services of all loyal and patriotic citizens and non-citizens in defending our land and our liberties.

"I urge all private employers to adopt a sane policy regarding aliens and foreign-born citizens, and to remember that the sons of the 'foreigners' they discharged may be among those who fought and are fighting so valiantly at Pearl Harbor or in the Philippines.

"There is no law providing against employment of aliens except in special defense work of a secret nature, and even in such work the employer may hire an alien with the permission of the Army or Navy, depending on the contract."

STATEMENT OF THE ATTORNEY GENERAL

"Two weeks ago the Department of Justice issued an appeal to state and local law-enforcement agencies and to the general public to help guard at home the freedoms our country is now fighting to defend by protecting the civil liberties of our loyal non-citizen population. There was a heartening response to this appeal—a minimum of hysteria and of the antagonism toward non-citizens as a class which marred our war-time record of two decades ago, and a willingness to leave to the qualified Federal authority the problem of dealing with whatever disloyal or treacherous elements, citizen and alien alike, which may still exist.

"There still remains, however, a serious problem in adjusting our sights to our one great objective; it is the problem of discrimination against aliens in private employment.

"No more short-sighted, wasteful or un-American policy could possibly be adopted at this time than that of barring non-citizens from legitimate private employment. In the first place, it is a most effective method of creating disunity, of breaking faith with people who have come to America as a haven of liberty and fair play. It is a complete disavowal of our American institutions, our freedoms, and the principles upon which our democracy was founded.

"I am sorry to say that numerous instances have come to the attention of the Department of Justice of employers discharging workers because of some vague 'suspicion' that they may be disloyal aliens, and even because they have 'foreign-sounding' names! I should like to remind such employers that of our total non-citizen population of about 5,000,000, fewer than 3,000—six out of ten thousand—have been regarded as dangerous to the peace and safety of the United States. Those have been taken into custody by the Federal authorities.

"I should also like to point out to these employers that many of the 'foreigners' they have discharged now have sons serving in our Army and Navy. Among those who died fighting off the treacherous attacks upon Manila and Pearl Harbor were men named Wagner and Petersen and Monzo and Rossini and Mueller and Rasmussen.

"To bar aliens from employment is both short-sighted and wasteful. Our country needs the skills and services of every able-bodied and loyal person, citizen or alien, and to deprive it of such services is an economic waste and a stupid error.

"There appears to be some confusion, in this connection, as to the policy of the Federal Government and as to the requirements of Federal statutes concerning the employment of aliens. As to the first, it is the stated policy of the Federal Government that there shall be no discrimination in the employment of workers in defense industries because of race, creed, color or national origin."

Probe Advantages of Pulverized Stone to Extinguish Bomb Fires

From several sources it has been suggested to us that pulverized limestone might be used to good advantage instead of sand for extinguishing magnesium incendiary bombs. The theory advanced was that the heat generated by the burning magnesium would be sufficient to liberate carbon dioxide from the limestone, which in itself would serve as an effective medium for controlling the fire.

Upon checking into the matter The National Lime Association was informed by the U. S. Bureau of Mines that the practice might be dangerous, as the magnesium in the bomb would reduce the carbon dioxide to carbon monoxide, a highly poisonous gas.

Among those who had this idea was Ralph S. Locke, sales manager, Diamond Springs Lime Company, San Francisco. His investigation of the possibilities of substituting ground limestone for sand developed the following interesting comments from Edgewood Arsenal:

1. Pulverized limestone has been tried in the controlling of the burning of magnesium incendiary bombs. The heat from the burning magnesium decomposes limestone ($CaCO_3$). The carbon dioxide gas produced, hastens the burning of the magnesium. Magnesium reduces carbon dioxide to carbon monoxide and magnesium oxide is formed. We have used considerable quantities of dry ice powder on burning magnesium and it hastened the burning of magnesium. It does somewhat cool and keep air from surrounded combustible matter and to that extent does curb the fire produced by magnesium incendiaries. Pulverized limestone would seem to have little to recommend it above dry or slightly moist sand, or for that matter a quantity of ordinary dry powdered readily available dirt. It seems it could not readily compete in price with an ordinary dry sand or certainly not a fairly dry powdered dirt.

2. The dry powdered dirt would probably have some mineral within it containing water in the molecular structure, and would cause some sputtering of the burning material, but considering the availability of such dirt, larger quantities of it can readily be used in controlling the burning of a magnesium unit. We continue to recommend proper application of water spray or of a dry or slightly moist sand as the most available cheap substance in combating magnesium incendiaries and small fires produced thereby.

WORLD'S LARGEST CRUSHED-STONE OPERATION

1. An aërial view of the operations of the Michigan Limestone & Chemical Company, at Calcite, Michigan. Shown is all the plant and a small part of the quarry which has 9½ miles of working face. In the foreground is the crusher building, where the stone is reduced to 9 inches and under. In the background a self-unloading boat is entering the harbor with a cargo of coal. At the left is the conveyor which returns to the stock-piles some of the fines formerly wasted. At the right is the shop which is equipped to make all necessary repairs and beyond it is the power-house.

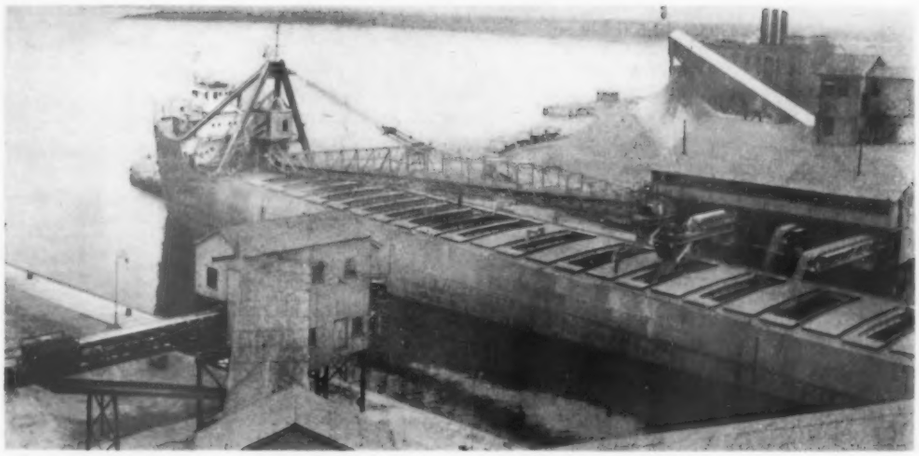
2. At the left is one of the 20-cubic yard counterbalanced electric shovels loading stone into a train of 35-cubic yard drop-door side-dump cars equipped with air-operated dumping mechanisms. Twenty cars of 50-cubic yard capacity have been ordered. This photograph shows how two shovels are operated on different levels to supply different types of stone to cars on one level. Below is one of the six Diesel-electric locomotives which have replaced steam locomotives in the quarry. A train of loaded cars is being hauled to the plant.

3. At the left is part of one of the two 54-inch belt-conveyors with 1,500 feet of continuous belting which carry the crushed stone from 10 feet below lake level to the top of the screening building 145 feet above the lake. Two 250-horsepower electric motors drive these conveyors.

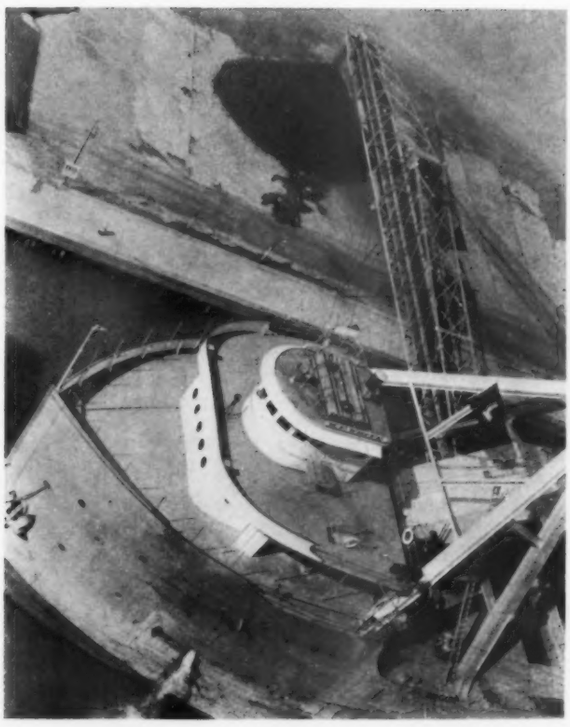
4. This view shows the main screening building which compares favorably in appearance with modern skyscraper office buildings. All the screening is done in this building, which also houses two reduction crushers. Usually not more than nine different sizes of stone are made at one time. Some of the stock-piles and distributing conveyors for some of the smaller sizes of stone produced are in the foreground. At the right above are the main conveyors from the crusher building; the repair shop is in the background. At the extreme left is the coal-unloading dock.

Aërial view above on opposite page copyright Abrams Aerial Survey Corporation. Other photos courtesy Michigan Limestone & Chemical Company, Bradley Transportation Company, and US Steel News.

5. Stone being loaded from shuttle belt-conveyors into the Steamer W. F. White at the Calcite dock. This is one of the six self-unloading boats operated by the Bradley Transportation Company, also a U. S. Steel subsidiary, to transport stone to yards and plants at various Great Lakes points. At the left is a boom conveyor used for loading out stone which has been reclaimed by tunnel conveyors from the stock-piles. In the right background is the steam plant which supplies power for all the plant and quarry operations.



6. At the right is a view looking down on the unloading boom conveyor of the Steamer W. F. White which is shown unloading coke to a dock. Under the cargo space in this vessel are two reclaiming belt-conveyors extending the full length of the ship. A bucket-elevator feeds the material to the boom belt-conveyor which can be swung through a wide area, thereby allowing the material to be unloaded over a considerable area. Below, Joseph Penglase, vice-president of the Michigan Limestone & Chemical Company and R. B. Henley, former auditor and secretary of that company and now auditor of the Oliver Iron Mining Company, stand in one of the 20-cubic yard shovel dippers.



CURRENT BUSINESS INDICATORS

The course that American industry will follow during the next two years has been charted by the decisions that have been made in Washington in recent weeks. By far the most important of these decisions has been the new arms production goal fixed by President Roosevelt in his message to the Congress on January 6. Under this program we are committed to produce 60,000 planes, 45,000 tanks, 20,000 anti-aircraft guns, and 8,000,000 tons of ocean-going ships during the current calendar year. Next year, moreover, our war production goal will be 125,000 airplanes, 75,000 tanks, 35,000 anti-aircraft guns, and 10,000,000 tons of merchant ships.

In terms of dollar value this gigantic armament program calls for the expenditure of $24,000,000,000 in the current fiscal year and approximately $53,000,000,000 during the fiscal year ending June 30, 1943. This means that within the next six months somewhat more than one-half of the national income will be devoted to the production of war materials. It means, in addition, that our national economy is going to be turned inside out and that no segment of industry is likely to be fortunate enough to escape unscathed.

To implement and give direction to the new armament production program, the President has created the War Production Board with Donald M. Nelson in supreme command. Under the terms of the executive order creating the new agency, Mr. Nelson's powers appear to exceed those delegated to Bernard Baruch by President Wilson during World War I and are probably equal to those now exercised by Lord Beaverbrook as Minister of Supply for Great Britain. Other members of the WPB include Secretary of War Stimson, Secretary of Navy Knox, Secretary of Commerce Jones, Price Administrator Henderson, Vice-President Wallace, Harry Hopkins, special assistant to the President, and William S. Knudsen, who has been shifted over to the Army as lieutenant general. As far as war production and procurement are concerned, however, Donald Nelson will be in full command, with greater powers than anyone in the country except the President.

Mr. Nelson's appointment to the key post in the war output set-up has created an easier feeling in war-tense Washington. In spite of the staggering dimensions of the job to be done, Mr. Nelson is convinced that the production goals fixed by the President can be achieved. Moreover, the methods that will be adopted to attain these goals are expected to be ruthless. From now on the one test that will be applied to all questions relating to production and supply is: Does it contribute directly toward winning the war?

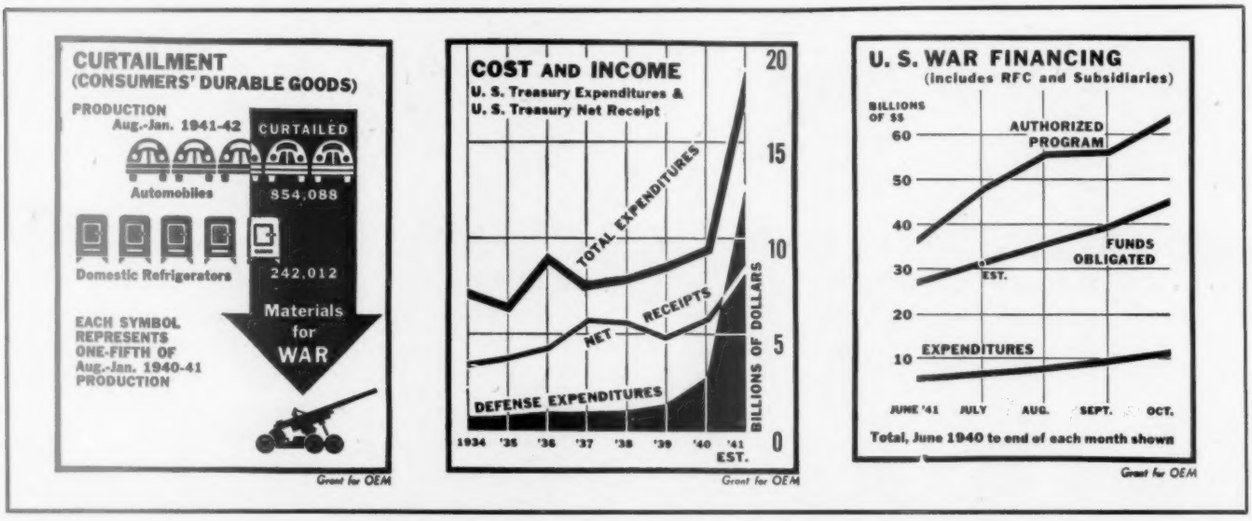
Under the pressure of wartime operation there was little evidence of the usual holiday let-down in industrial output in December. Indeed, instead of the usual decline, the Federal Reserve Board's adjusted index of production in manufacturing and mining rose to 168 per cent. of the 1935-39 average in December. This compares with a revised index of 166 for the previous month and with 138 for the corresponding month of 1940. Thus the rate of industrial output has been raised by more than one-fifth during the past year.

One of the important factors contributing to the December advance in the composite index was the impressive production record of the iron and steel industry. Throughout the month all segments of the industry operated at close to capacity. Pig-iron output in December amounted to 5,014,995 net tons, breaking all previous monthly records. At the same time steel production totaled 7,163,999 tons, or within 1 per cent. of the record-breaking output of October.

Freight-car loadings also increased substantially during the month. Against an index of 135 for November the seasonally-adjusted index for December stood at 137. This means that the volume of freight traffic is now back to the approximate level that was reached during the early fall.

Construction activity during December again declined, as was to be expected at this season of the year. In spite of this decline the volume of construction in 1941 reached the highest level that has been reached during the past decade. Engineering construction awards during the year totaled $5,868,699,000 according to *Engineering News Record*, the highest volume on record.

Price movements since the outbreak of the war have resumed the upward trend that was temporarily halted during the late fall. The Bureau of Labor Statistics' index now stands at 94 per cent. of the 1926 average as against 92 in December. Meanwhile the Congress, after considerable squabbling, finally passed the price-control bill. The Senate's version of the measure turned out to be even worse than the highly unsatisfactory House version. Last-minute amendments forced through by the farm *bloc* killed any hope of regulating effectively the prices of agricultural commodities. The bill went to the White House after a conference agreement on January 28.



Industrial Lift Trucks. — Preference Rating Order P-40, making available an A-1-g rating for materials going into the manufacture of industrial lift trucks and replacement parts, was extended January 10 until March 10 by an order issued by Acting Director of Priorities J. S. Knowlson.

The high rating which would have expired January 10, is designed to assure continuation of the building program for industrial lift trucks.

Priorities assistance in the acquisition of materials used in the manufacture of lift trucks originally was granted October 14, 1941. Last December 30 the A-1-g rating was extended to deliveries of material for producing electric storage batteries and gas-electric units and repair parts designed and manufactured solely for replacement purposes.

Lime Industry.—Although there has been some doubt as to the extent to which Preference Rating Order P-56 is applicable to the lime industry, OPM has not issued any official announcement that would dispel it. The text of the order defines the mining industry as embracing "any plant actually engaged in the extraction by surface, open-pit or underground methods, or in the beneficiation, concentration or preparation for shipment of the products of mining activity." This would seem to cover all the operations of the average lime plant from the recovery, or "extraction," of the raw material in the quarry or underground mine up to the point where shipment from the plant, by highway or railway, begins. The current issue of *Limeographs,* published by the National Lime Association, takes a different view. It states that the lime industry is covered by P-56 "up to the point of bagging or packaging the finished products." The text quoted above would hardly seem to justify the drawing of such a conclusion. That part of the order which makes it applicable to "any plant actually engaged in the . . . *preparation for shipment* of the products of mining activity" would appear to carry the provisions of the order not only *"up to* the point of bagging or packaging the finished products" but actually *through* those operations, since these are certainly parts of the activity described as "preparation for shipment." An official interpretation is needed to clarify this part of the text in so far as it affects the lime industry.

Mining Machinery.—The Priorities Division issued on December 31, 1941 an order on behalf of manufacturers of mining machinery, which should greatly facilitate their acquisition of necessary scarce materials, and enable them to plan their purchases in advance.

The new order, P-56-a, replaces P-23, which expired December 31. Application for its assistance should be made on form PD-25a, the form used in connection with the Production Requirements Plan. It is pointed out, however, that this is a special use of this form, and the filing of it by mining-machinery producers does not place them under the terms of the Production Requirements Plan. A letter of instruction will accompany each copy of the order sent to a manufacturer. The value of PD-25a lies in its provision for rating approved deliveries for an entire calendar quarter. Assistance will be limited to manufacturers of the types of machinery specified in Schedule A[1] of the new order.

In addition to the manufacturer's needs for the first three months of 1942, application may be made at once for similar assistance for the quarters April 1-June 30, and July 1-September 30, 1942, if orders from mines already on a manufacturer's book for shipment in those periods warrant such application. Material requirements for each quarter must be filed on separate forms.

A preference rating of A-3 will be assigned by the Director of Priorities to deliveries of specified types and quantities of materials.

The benefits of the rating may be extended by a producer to his suppliers, and they in turn may extend them to sub-suppliers, if necessary to assure ultimate delivery of the rated order.

Preference Ratings. — Assignment and extension of individual preference ratings has been simplified and made more uniform by Priorities Regulation No. 3, announced January 12 by Donald M. Nelson, then Director of Priorities, now Chairman of the newly-created War Production Board.

Beginning February 2, 1942, individual preference ratings of the type which has heretofore been assigned on PD-1 and PD-3 forms may be extended to suppliers and subsuppliers of the producer who receives the rating by a simple endorsement on purchase orders, like that now used for extension of limited blanket ratings and ratings under the Production Requirements Plan.

Under an arrangement between the Director of Priorities and the Army and Navy Munitions Board, ratings assigned by Army and Navy field officers will no longer be limited to items appearing on the Army and Navy Priorities Critical List. However, under Regulation No. 3, extension of individual ratings will be limited to material which will be physically incorporated in the items originally rated.

Two new forms of Preference Rating Certificates, PD-1A and PD-3A, will replace the present forms, PD-1 to PD-5 inclusive, for assignment of individual ratings. Use of the new forms will be optional on and after February 2 and mandatory on and after March 1.

Form PD-1A which will replace Form PD-1 is a simplified blank to be used in making specific applications for materials or supplies when general preference orders do not provide the required priority assistance. When PD-1A applications are approved by the Priorities Division, ratings will be assigned on the form itself. A similar procedure has been standard for some months. Form PD-2, which was formerly used to assign ratings in response to applications on PD-1 forms, will disappear and will not be replaced.

Preference ratings assigned to applicants who use Form PD-1A may be extended on and after February 2 to suppliers and subsuppliers of the applicant by the prescribed endorsement on purchase orders, signed by a duly authorized representative of the company making the extension, and will not require a countersignature from any government officer. Heretofore, preference ratings assigned on PD-1 forms have not been extendable under any circumstances.

Form PD-3A will be used for all applications for ratings in connection with orders from the Army, Navy, Coast Guard, Maritime Commission, Coast

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WAR EFFORT INDICES

MANPOWER

National labor force, December	53,300,000
Unemployed, December	3,800,000
Nonagricultural workers, November	*40,693,000
Percentage increase since June, 1940	13
18 defense industries, November	2,750,000
Percentage increase since June, 1940	72

FINANCE

June, 1940, to latest reporting date	
Authorized program, to December 31	*$76,470,000
Total disbursements, December 31	*15,252,000

PRODUCTION

June, 1940, to latest reporting date	
Paid on contracts, December 31	*$12,440,000
Government commitments for plant expansion; 660 projects, November 30	5,067,000
Private commitments for plant expansion; 2,730 projects, October 31	1,048,000

WEEK ENDED JANUARY 17, 1942

	Strikes	Workers
Significant strikes in progress during week	2	850
Number settled	2	850

* Preliminary.

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[1] [See PIT AND QUARRY, January 1942, page 116.—ED.]

and Geodetic Survey, Panama Canal, National Advisory Committee on Aeronautics, Civil Aeronautics Authority, Office of Scientific Research and Development, Procurement Division of the Department of the Treasury, Surplus Marketing Administration of the Department of Agriculture, and contracts or purchase orders from foreign governments. It will replace Forms PD-3, PD-4, and PD-5.

Ratings assigned on Form PD-3A may also be extended to suppliers and subsuppliers without countersignature. Ratings which have been assigned on PD-3 forms were formerly extendable without countersignature only if the amount of the order involved was less than $500.

When an individually rated order is served upon a supplier by the original applicant under the new procedure, the rating may be extended by the supplier, by his suppliers and subsuppliers to obtain any material which will be delivered to the original applicant in accordance with the rating, but neither the applicant, his suppliers or subsuppliers may use the rating to obtain machinery or capital equipment which they use in fabricating parts to fill the order. If producers who have been assigned a rating on a PD-1A form need machinery or capital equipment for this purpose which they cannot obtain without priority assistance, they must apply for a separate preference rating on another PD-1A form. Prime contractors who need machinery or equipment to be used exclusively in filling Army or Navy orders may be given a rating for use in obtaining such machinery or equipment on PD-3A forms.

Another important change made by Priorities Regulation No. 3 allows the recipient of an individual rating, his suppliers and subsuppliers to employ the rating for replacement in inventory of materials used in filling the rated order, provided such replacement does not increase inventories above a practicable working minimum.

If the materials to be replaced are in whole or in part manufactured, processed, assembled or otherwise physically changed by the supplier, the rating must be extended while the materials are in process of fabrication. For materials which are not processed or otherwise changed by the supplier, extension of the rating may be deferred up to three months, until an order can be placed for the minimum quantity procurable on customary terms. This provision is primarily for the benefit of wholesalers and distributors, enabling them to group their own orders while making deliveries in small quantities.

The new regulation also allows a supplier or subsupplier who has received two or more purchase orders bearing ratings of the same grade to include in a single purchase order or "basket," within the limitations which have been indicated above, any or all of the material which he requires to make deliveries in accordance with the rated purchase orders which have been served upon him. In such case, he must specify in the certification on his own purchase order all of the Preference Rating Certificate form numbers and serial numbers referring to the orders in connection with which he is extending the ratings.

All persons who receive or extend preference ratings assigned on PD-1A and PD-3A forms must keep records as prescribed by Priorities Regulation No. 1 and make such reports as may be required by the Director of Priorities. Use of PD-3A forms may also be subject to such further requirements as may be set forth by the Army and Navy Munitions Board with the concurrence of the Director of Priorities.

Preference Rating Certificate Form PD-1A may be reproduced in blank by or for any user, but Preference Rating Certificate Form PD-3A may not be reproduced. PD-1A forms may be procured from the Priorities Division of the Office of Production Management either in Washington or in field offices. PD-3A forms may be procured from contracting and procurement officers of the Army and Navy.

Copies of the new forms will not be distributed to applicants by the Office of Production Management or the Army or Navy until immediately before February 2, 1942.

Tires.—OPA's *Tire Rationing Regulations,* referred to in these pages last month, have been revised by Amendment No. 1 of January 12. This defines the word "truck" to mean "any vehicle designed *for use on the highways* to carry freight, including raw materials, semi-finished goods and finished products, farm products and food." The words in italics have been substituted for the word "primarily" which appeared in the original text. As the result of this clarification, most trucks used wholly within plants—those not designed for use on highways and not using tires capable of being used as highway trucks—are exempt from the restrictions imposed. Thus, industrial trucks, lift trucks and industrial tractors used inside plants are exempt, but some motor trucks, which are *designed for use on the highways,* may not be exempt even though they may be employed solely within a quarry, pit or plant and may never be operated on the highways. The determining condition is the nature of the service in which they are employed.

Thus, it is possible to obtain tire-purchase certificates, even for trucks *designed for use on the highways,* if such trucks are used for certain purposes. Among the exempt uses listed in *Tire Rationing Restrictions* the following are of interest to nonmetallic-mineral producers and to manufacturers of cement, lime, gypsum, concrete products, ready-mixed concrete, etc. The tires or tubes to be bought must be for use—

(*d*) On a vehicle, with a capacity of 10 or more passengers, operated exclusively for one or more of the following purposes: . . .

(3) Transportation of employees to or from any industrial or mining establishment or construction project, except when public transportation facilities are readily available.

(i) Certificates shall be issued under this paragraph (*d*) (3) only for buses used to transport workers to places of employment which can not be easily reached by means of transportation available to the public. No certificate shall be issued where the workers can conveniently reach the place of employment, or go from place to place while on the job, by using public transportation facilities.

ii. The local boards may issue certificates under this paragraph (*d*) (3) where, although public transportation facilities exist, such facilities are inadequate to provide reliable and rapid transportation essential to uninterrupted product.

iii. Vehicles for which certificates are issued under this paragraph (*d*) (3) may be used for any other purpose stated in this subsection (*d*), but a statement of the additional purposes for which the vehicle is to be used shall be included in the application.

(*e*) On a truck operated exclusively for one or more of the purposes stated in the preceding sections or for one or more of the following purposes: . . .

(2) Transportation of material and equipment for the building and maintenance of public roads.

i. Because of the importance of public roads to the functioning of the industrial and military system, certificates may be issued for trucks, snow plows and similar equipment to be used for the building and maintenance of public roads.

ii. A truck for which a certificate is issued under this paragraph (*e*) (2) may be used for any other purpose stated in this subsection (*e*), or for any of the purposes stated in subsections (*a*), (*b*), (*c*)[1], and (*d*), but a statement of the additional purposes for which the truck is to be used shall be included in the application for a certificate.

(3) Transportation of material and equipment for the construction and maintenance of public utilities.

i. For the purposes of this subsection the term "public utilities" shall include gas, electric, and water supply systems, telephone and telegraph systems, transportation systems the facilities of which are available to the general public (railroads, airlines, street-car lines, etc.) and similar public-service institutions, whether publicly or privately operated.

ii. Certificates may be issued for any truck used to transport supplies, material and equipment for the construction, maintenance and repair of public utilities, as defined above.

iii. A truck for which a certificate is issued under this paragraph (*e*) (2) may be used for any other purpose stated in this subsection (*e*), or for any of the purposes stated in subsections (*a*), (*b*), (*c*)[1], and (*d*), but a statement of the additional purposes for which the truck is to be used shall be included in the application for a certificate.

(4) Transportation of material and equipment for the construction and maintenance of production facilities.

i. In issuing certificates under this paragraph (*e*) (4), the local board is to adhere strictly to the requirement that trucks are to be granted new tires or tubes only to transport materials, supplies, and equipment for the construction and maintenance of factories, mines and similar production establishments.

ii. A truck for which a certificate is issued under this paragraph (*e*) (4) may be used for any other purpose stated in this subsection (*e*), or for any of the purposes stated in subsections (*a*), (*b*), (*c*)[1], and (*d*), but a statement of the additional purposes shall be included in the application for a certificate.

(5) Transportation of material and equipment for the construction of defense housing facilities and military and naval establishments.

(i) Certificates may be issued under this paragraph (*e*) (5) for trucks not owned by the Army or Navy to be used in the construction of new housing facilities, to be occupied principally by workers in defense plants, and in the construction of cantonments, navy yards, docks and other military and naval establishments directly controlled by the armed forces of the United States.

(ii) A truck equipped with tires or tubes for which a certificate has been issued under this paragraph (*e*) (5) may be used for any of the purposes stated in subsections (*a*), (*b*), (*c*)[1], and (*d*) but a statement of the additional purposes shall be included in the application for a certificate.

(9) Transportation of raw materials, semi-manufactured goods, and finished products, including farm products and foods, provided that no certificate shall be issued for a new tire or tube to be mounted on trucks used (*a*) for the transportation of commodities to the ultimate consumer for personal, family, or household use; or (*b*) for transportation of materials for construction and maintenance except to the extent specifically provided by paragraphs 2, 3, 4, 5, and 6[2] of this subsection (*e*).

i. Certificates may be issued for trucks used to transport raw materials, semi-manufactured goods, and finished products, including farm products and foods, except (*a*) transportation of commodities to the ultimate consumer for personal, family, or household use; and (*b*) transportation of materials for construction and maintenance except to the extent provided by paragraphs 2, 3, 4, 5, and 6[2] of this subsection (*e*).

ii. No truck equipped with tires or tubes for which a certificate has been issued shall be used to deliver milk or other foods to a consumer for personal, family, or household use, or to make such deliveries of other commodities for a department store, grocery store, or similar sales outlet.

iii. No truck equipped with tires or tubes for which a certificate has been issued shall be used for the transportation of materials for construction or maintenance, except to the limited extent provided in paragraphs 2, 3, 4, 5 and 6 of this subsection (*e*).

iv. A truck for which a certificate has been issued under this paragraph (*e*) (9) may be used for any other purpose stated in this subsection (*e*) or for any of the purposes stated in subsections (*a*), (*b*), (*c*)[1], and (*d*), but a statement of the additional purposes for which the truck is to be used shall be included in the application.

(*g*) On industrial, mining, and construction equipment, other than automobiles or trucks, for the operation of which rubber tires, casings or tubes are essential.

i. Certificates may be issued for industrial, mining, and construction equipment including such equipment as derricks, bulldozers, and drills, for the operation of which rubber tires or tubes are essential.

ii. Nothing in this subsection (*g*) shall be construed to permit the issuance of a certificate when the equipment can operate or can be adapted to operate without such tires or tubes.

[1] These subsections cover vehicles operated: (a) by physicians, surgeons, visiting nurses and veterinaries, (b) as ambulances, and (c) to maintain fire-fighting public police, garbage-disposal or mail services or to enforce laws relating specifically to the protection of public health and safety.

[2] Paragraph 6 deals with "transportation essential to render roofing, plumbing, heating, and electrical repair services.

Multiple-ply Tires. — A two-point amendment to the government's order restricting sales of new tires was announced January 17 by Leon Henderson, Administrator of the OPA. The amendment, which applies to Supplementary Order M-15-c of the Office of Production Management modifies the prohibition on sales of 6- and 8-ply in all popular passenger-car and light-truck sizes and imposes full rationing restrictions on truck tires for vehicles 10 years old or more.

Mr. Henderson emphasized that this amendment does not mean that there has been any change in the tire situation, but simply represents a minor adjustment made after investigations.

"Not a single tire has been added to our supplies," the Administrator stated. "Strict rationing is still the order of the day so that our absolutely essential public health and safety services can continue to operate. Our stock-pile of rubber, which must meet our military needs ahead of all others, would be used up in a short while at anything like a normal rate of consumption."

"Eligible" users of light-truck size tires, according to the amendment, now can buy any ply of tire—4, 6, or 8—if they can obtain the required certificate from their rationing board. Formerly, only 4-ply tires could be purchased by light-truck operators.

By subjecting tires of sizes used by trucks 10 years old or more to the full restrictions of the rationing program, the amendment limits their sale to "eligible" users only. These "obsolete" sizes previously were under moderate restrictions that only required that a user: (a) prove his need for a new tire to the local rationing board; (b) use the new tire only to replace a worn-out tire; and (c) turn in his old casing to the dealer making the sale.

Retreading Material.—Ceiling prices for the three grades of tire-retreading material known as "camelback" that OPM has ruled are the only grades that may be manufactured hereafter, were established, in effect, on January 19 in telegrams sent out by Leon Henderson.

A formal schedule of maximum prices for camelback is being prepared and will be issued in the near future. Meanwhile, according to the telegrams, producers are requested not to charge more than 28 cents a pound for camelback containing 57½ to 62½ per cent. crude rubber; 23 cents a pound for the grade containing 38 to 48 per cent. crude rubber; and 18 cents a pound for the grade containing not over 20 per cent. crude rubber.

These maximum prices correspond to prevailing market levels for equivalent grades.

Second-Hand Tires. — Striking directly at widespread profiteering in second-hand tires, Price Administrator Leon Henderson announced January 12 an emergency schedule of maximum prices for "retreadable" tire carcasses and "retreads" and said he would impose a price ceiling over used tires in the very near future. This schedule, which went into effect January 19, establishes the maximum prices that may be charged for "retreadable" and retreaded or recapped rubber tires for passenger cars, trucks, buses, agricultural implements, industrial machines, motorcycles, and other vehicles of common use.

The ceiling over used-tire prices, expected soon, will take the form of an amendment to the OPA schedule of maximum prices over new tires, which was announced on December 30. With the issuance of this amendment, Administrator Henderson will have established maximum prices over tires at every stage of condition and use.

"The public must be protected from exploitation," Mr. Henderson stated. "Your government has been compelled to suspend sales of tires to ordinary civilian users in order that our armed forces may have adequate supplies. Excepting for doctors, nurses and public services essential to the general health and safety, civilians will have to equip their cars and trucks with used or retreaded tires. Profiteering in these tires already has reached serious proportions, a condition that can not and will not be allowed to continue. Your government can not permit price to determine who can afford and who can not afford to buy second-hand tires in this time of war."

Sets of ceiling prices in the present schedule are given for the various sizes of used-tire carcasses in such condition as to warrant retreading, for the actual retreading or recapping, and for retreaded or recapped tires. Specific top prices are set according to the market price of "camelback" used (the uncured rubber compound which is applied to worn tires to make the new tread) and the depth of the new tread. Maximum prices for retreaded or recapped tires are arrived at by adding together the maximum price of the carcass used and the applicable maximum

price for the actual retreading or recapping.

Following are the top prices in the schedule as applied to the more popular sizes of passenger-car, truck, and tractor tires, using for purposes of illustration (1) the *most expensive* grade of camelback and the *deepest* tread depth and (2) the *second most expensive* grade of camelback and *next the deepest* tread depth.

Synthetic Rubber.—Leon Henderson announced January 15 that there is no reason to expect any relaxation of the tire-rationing program for "at least 18 months and possibly longer." This statement was made to check the hopes of those who, because of the government's announced plan for government-financed construction of synthetic-rubber factories, thought that the ban on new-tire sales could now be lifted.

PASSENGER CARS
(Maximum Prices)

Size	Basic Tire Carcass	Retreading, Full Capping, or Top Capping (1)	Retreading, Full Capping, or Top Capping (2)	Retreaded or Recapped Tire (1)	Retreaded or Recapped Tire (2)
6.00-16	$1.50	$ 7.50	$6.45	$ 9.00	$ 7.95
6.25-16	1.50	8.25	7.10	9.75	8.60
6.50-16	1.50	8.70	7.50	10.20	9.00
7.00-16	1.50	10.35	8.95	11.85	10.45
5.25-17	1.50	6.55	5.55	8.05	7.05
5.50-17	1.50	7.10	6.05	8.60	7.55

TRUCKS
(Maximum Prices)

Size	Basic Tire Carcass	Retreading or Full Capping (1)	Retreading or Full Capping (2)	Top Capping (1)	Top Capping (2)
6.00-20 (30-5) (6-ply)	$ 4.20	$ 7.60	$ 6.75	$ 6.50	$ 5.70
6.00-20 (30-5) (8-ply)	6.00	8.85	7.80	7.50	6.55
6.50-20 (32-6) (8-ply)	6.00	12.45	10.95	10.55	9.30
6.50-20 (6-ply)	4.50	10.00	8.80	8.50	7.45
7.50-20 (34-7) (10-ply)	9.60	16.20	14.25	13.80	12.10
7.50-24 (38-7)	7.20	17.15	15.05	14.60	12.85
8.25-20	10.80	21.85	19.15	18.55	16.30
9.00-20 (36-8)	12.00	26.35	23.15	22.35	19.70
12.00-20 (11.25-20)	16.80	43.95	38.60	37.35	32.85
12.00-24 (11.25-24)	16.80	47.45	41.75	40.30	35.40
9.00-36 (11-36) (tractor)	9.90	34.50	....	....	....

Note—To obtain the maximum price for retreaded or recapped tires listed under "Trucks" above, add to the carcass price the price of the applicable retreading or recapping job.

There are various other categories of camelback and tread depths for which the schedule lists maximum prices.

A "basic tire carcass," according to the schedule, means a used rubber tire retaining a maximum of $\frac{2}{32}$nds of an inch of the original tread, when measured at the shallowest point of the center circumference.

"Retreading" is defined as the process of reconditioning a tire where all the original tread rubber is removed from the worn tire down to the fabric and new rubber applied to the tread surface and side walls. "Top capping," the schedule states, means the application of new rubber to the tread surface only, after buffing off the old tread, while a "full cap" involves the application of new rubber to the tread surface and shoulders as well.

Asks Abrasives Makers to Keep Prices Down

Manufacturers of coated abrasive products and bonded abrasive products were asked by Leon Henderson, Administrator, Office of Price Administration, on January 23 not to publish, quote prices on, nor sell their output at prices above those each manufacturer had in effect October 1, 1941. This request, made in letter form, applies to all such items sold by these manufacturers, whether part of their regular line or a specialty.

In the event that any manufacturer considers it necessary to increase prices over those in effect October 1, OPA requests that it be notified one month in advance of the date upon which the intended increase would take effect. Should a manufacturer submit such proposed price rise, he is requested at the same time to forward a detailed factual statement of reasons believed by him to justify proposed increases, including financial data.

Coated abrasives include sandpaper, garnet paper, flint cloth, aluminous oxide cloth, etc. Their part in the war effort includes use in finishing aircraft engine parts, air frames, hard metals, and cutting and finishing leather and leather products. Coated abrasive product prices advanced on the average from 6 to 10 per cent. in November-December, 1941, the first advance since 1937. The price rise is being investigated by the OPA, and until full details for this rise are forthcoming, it has been determined that the previously-existing price level should not be exceeded.

Bonded abrasives include grinding wheels, honing sticks, sharpening stone, etc., are important in armament production, and are essential to the manufacture of airplanes, tanks, etc. Grinding wheels are essential to repair of combat vehicles and aircraft in the field, since interchangeability of parts and close tolerances would not be possible without their use.

Henderson Asks Price Ceiling on Fluorspar

Fluorspar producers were asked on January 23 not to publish, quote prices on, nor sell this non-metallic mineral at above their prices in effect January 2, 1942. The request was made in a letter sent them by Leon Henderson, OPM Administrator.

In the event that any fluorspar producer considers it necessary to increase prices above the January 2 level, the Administrator requests that he notify OPA one month in advance of the date upon which the intended increase would take effect. In conjunction with any such proposed increase, Mr. Henderson asked that detailed factual statement of reasons believed by the producer to justify the proposed increase, including financial data, be submitted.

Fluorspar is of considerable commercial importance in manufacturing steel, aluminum, ceramic and chemical products and refrigerants. About 80 per cent. of domestic fluorspar output comes from Illinois and Kentucky. The increased rate of steel and, especially, aluminum production has created a large demand for fluorspar. Prices as on January 2, 1942, are adequate to insure a supply from existing sources sufficient to meet this demand. Fluorspar prices have advanced substantially in the last six months. Fluxing ravel spar, for example, is selling at the highest levels since 1920.

Celotex, Certainteed Share New Offices

General offices of two of the nation's largest building-material manufacturers will be moved to the 120 South La Salle Building in Chicago about April 1, it was announced by Bror Dahlberg, president of the Celotex Corporation of Chicago and chairman of the board of Certain-teed Products Corporation of New York.

Certain-teed's general offices will be transferred from their present location at 100 East 42d Street, New York City, and the Celotex offices will be moved from the Palmolive Building at 919 North Michigan Avenue, Chicago.

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EDITORIAL

Private Interest in Government Functioning

ALTHOUGH the Truman report, which exposed the weaknesses in the directing organization charged with the responsibility of arming America and her allies, pointed the finger of accusation at what may be the greatest weakness of all, some people think that the point was not given sufficient prominence to insure correction. The weakness they refer to is that of "entrusting the solution of public problems to persons with private interests." They contend that this is the kernel of the problem, that most of the other difficulties enumerated stem from this one, that no amount of energy, talent, enthusiasm or ingenuity will avail, if the centers of authority armed with the power to initiate and carry through proposed programs have private interests that, in their own minds, transcend those of the nation as a whole.

"The committee is opposed," says the report, "to a policy of taking free services from persons with axes to grind, and the committee believes that the government should not continue to accept loan of dollar-a-year men and without-compensation men from companies with so large a stake in the defense program. The committee therefore suggests that steps should be taken by the Office of Production Management to offer government salaries to the dollar-a-year and without-compensation men within the range which the government has paid for positions of similar responsibility in other departments, and that such persons should be required during the duration of their employment by the government to disassociate themselves from any employment by or payment from companies which have obtained large defense contracts. . . . No man can honestly serve two masters."

The use of the word "honestly" in the last sentence quoted carries implications that may not be justified by the facts and are certain to provide ammunition for those who are engaged in guerrilla warfare against capitalist enterprise. We feel that it would have been fairer to have said that "No man can well serve two masters." However that may be, it is true that it is extremely difficult—often, and perhaps usually, impossible—for a business man to serve the public interest, when that interest conflicts with his private interest. The reason, it seems to us, is not to be found in dishonesty or lack of ethical principles on the part of business men, but rather in their natural inability to place public interest above self interest.

While the Truman report discloses on the part of its framers some inkling of this fundamental truth, the remedies it proposes do not touch the heart of the problem. Temporary disassociation from the interests to which business men devote their lives is, psychologists would say, practically impossible. Long-continued participation in the activities commonly called business develops certain habits of thought and patterns of behavior that are peculiar to business and give to that form of enterprise all those characteristics that distinguish it from public enterprise. Continuous and persistent and determined concentration on the advancement of one's personal financial interests, or of those of one's employer, results in the unconscious adoption of definite standards of conduct, of habitual points of view, of easily predictable reactions to outside stimuli. It produces a type of human nature. It shapes one's thinking on all kinds of questions. It so completely molds a man's principles and canalizes his activities that he stands apart from other men not so engaged. The result is a distinct intellectual type, not a cloak that can be laid aside for a period such as the duration of the war and then returned to its wearer's back like a costume in a play.

Men can not think in terms of broad, public, impersonal interest if they are accustomed to judging every contemplated or proposed action in the light of personal interest alone. It is practically impossible for them to understand the nature of the public's interest, to feel sympathy for a public cause, to gird themselves to meet a common danger unless these things directly affect their own interests, too. And when these things run counter to their own interest, their objections, their hostility, their active opposition at once become evident. This dominance of self interest over all other interests characterizes not only the men who own or manage business enterprises; it influences men of professional training who work for them. Engineers, for example, when employed in private (business) enterprise, seldom turn out the best product of which they, their organizations, or the state of the industrial arts are capable. Their natural aim to produce articles or materials of maximum utility and serviceability is thwarted and diverted to the production of those kinds of things which will return the greatest profit. Even such men, trained in the ethical and technical standards of their professions, after years of employment in private enterprise find it difficult, when called upon, to apply their technical principles and knowledge without the profit-considering qualifications to which their employment has accustomed them.

THE technical skill that has created so many good products, even under the restrictions imposed by the profit standard of production, is badly needed, if we are to obtain the best implements of war which our knowledge and facilities can produce, and not, instead, only those that can be made with the greatest profit to manufacturers or with the least disruption of their plants and profit-production schedules. The organizing ability that has made many business enterprises good examples of efficiency and thoroughness is badly needed in the production-controlling and directing departments of our government. To apply both kinds of talent and skill most effectively we must employ in our public effort only those men who are demonstrably free from entangling alliances with private interest. If such men can not be found, then we must seek the next best that can be obtained and employ them despite their limiting habits and predispositions, but we must make them subservient in the matter of decisions and policies to men whose experience has been gained in fields that have not been dominated by the demands and criteria of private gain.

There is good reason to believe that the seriousness of this problem has at last been recognized and that the establishment of one-man control, through the War Production Board and the dissolution of OPM as originally constituted, will provide the solution.

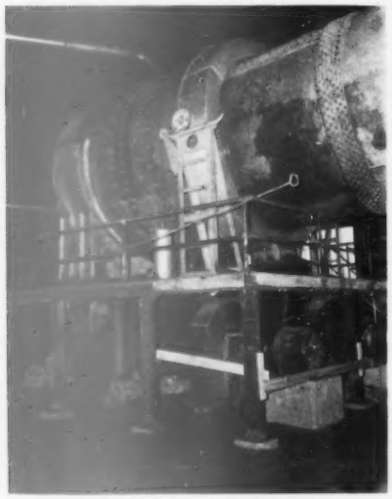
Two Old Rotary Kilns Joined to Make One 400-Foot Unit at Peerless Plant

THE sharp increase in the demand for Portland cement during 1941 was responsible for the calling back into service of production facilities which had been standing idle for many years. A case in point is that of the Port Huron, Michigan, plant of the Peerless Cement Corporation, which resumed operation in July, 1941, after the completion of improvements begun in February. All these improvements were made under the supervision of W. L. Kaiser, works manager of the corporation's plants. Built by the New Egyptian Portland Cement Company in 1923-24, this plant was taken over by Peerless in 1928 at a time when few changes had been made in it. During the comparatively poor years of 1931-37 this plant was shut down except for a few months in 1932 and 1937. In 1938 it was operated for only one month and was again shut down until its recent reopening. During these periods the company filled all orders from its Detroit plant.

The outstanding feature of the Port Huron plant is the 11- by 400-foot kiln which was made by joining the two original 11- by 200-foot Traylor kilns. This was done by taking down one of the kilns in four sections and riveting it to the feed end of the other kiln. The added sections were raised into place on wooden A-frames and the permanent concrete foundations were poured after it was in place. Both kilns originally had a pitch of ⅜-inch to the foot, but in 1931 the pitch of one kiln was changed to ½ inch to the foot, which is now the pitch of the lengthened kiln. Each kiln was driven through gears and silent chain by an independent 100-horsepower motor, but the two motors are now operated in synchronism by a method developed at the plant.

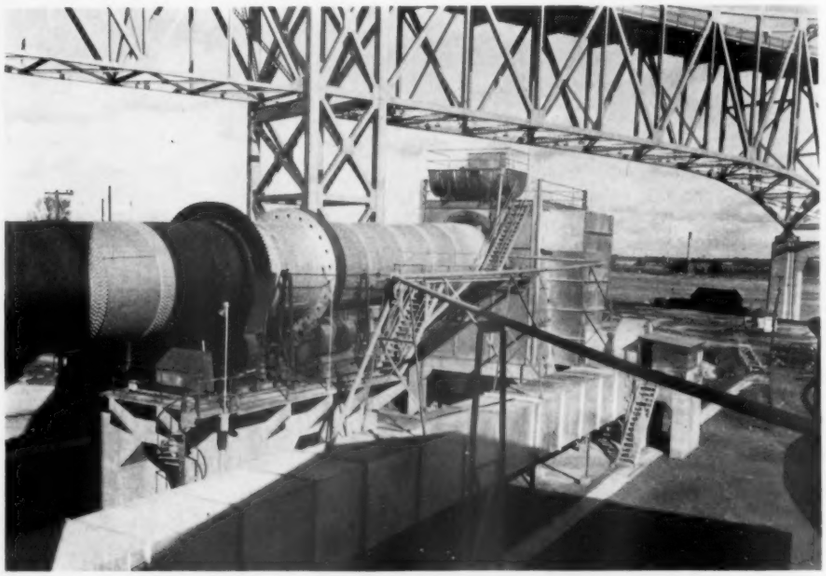
Economy of operation was the primary consideration in making this and other changes in the plant; capacity was secondary. The capacity of the two short kilns combined was 125 barrels per hour and that of the long kiln is nearly 100 barrels per hour.

The ¾-inch minus limestone used in this plant is received from the plant of the Michigan Limestone & Chemical

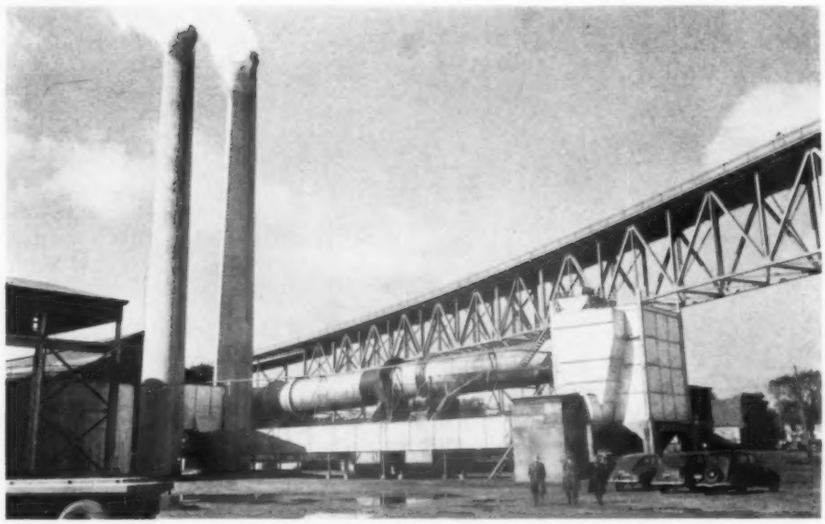


The improved-type recuperator on the 400-foot kiln with fans below.

A boat unloading stone from the dock on the Huron River to the hopper at the plant.



This view shows the feed end of the kiln with the reverse flue to the stacks. The bridge to Canada is in the background.



This view shows the manner in which the reverse flue to the stacks is connected to the breeching in which is a spray washing system.

Company at Rogers City, Michigan, in self-unloading boats. The unloading is done at the rate of 2,000 tons per hour to a hopper at the plant dock on the Huron River which connects Lakes Huron and Erie. A belt-conveyor feeds from the hopper direct to storage at the same rate. A shuttle belt-conveyor distributes the stone in the 18,000-ton storage building, which also has space for 800 tons of clay that is received by railway from a pit 15 miles south of the plant.

A 1½-cubic yard overhead crane transfers the stone to steel bins from which Schaffer Poidometers feed the two Traylor 7- by 26-foot 3-compartment raw mills. This crane also feeds the clay into a circular wash-mill from

The slight clearance between the lengthened kiln and one stack is shown.

which a Morris 5-inch pump forces the slip to a pair of circular concrete mixing tanks equipped with air-and-mechanical agitation. Together these tanks hold a 24-hour supply for the kiln. After the slip has been analyzed another Morris pump transfers it to the mill-feed tank. A constant level is kept in this tank by means of a float switch. Ferris-wheel feeders supply each of the two raw mills. A third mill originally installed in this department was removed in 1940 for use in the masonry-mortar department of the Detroit plant. One of the next improvements will be the installation of a 2-stage closed-circuit raw-material grinding system in this department.

The slurry is discharged from the raw-material mills with a moisture content of 31 to 32 per cent. A Morris pump feeds the slurry to four concrete tanks which have 48-hour kiln-feed capacity. Two Morris pumps feed it from these tanks to two concrete blending tanks. Two other Morris pumps supply the kiln-feed tanks. A Ferris-wheel feeder discharges the slurry into the kiln with a moisture content of 32 to 33 per cent. The rate of feed is varied with the speed of the kiln through a direct chain drive.

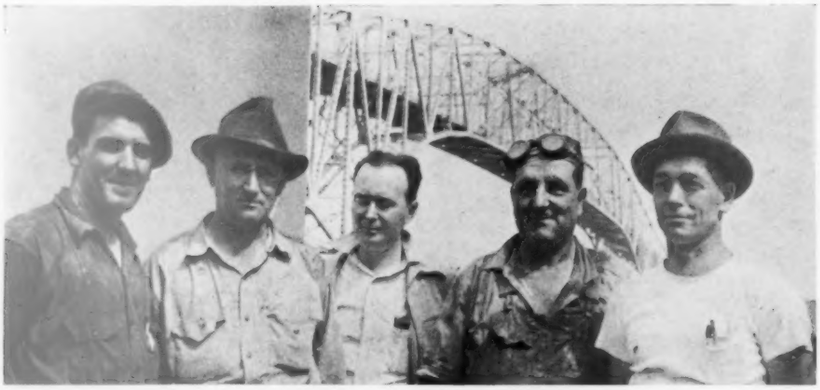
The kiln is equipped with heat-transfer chains in the feed end, and the draft is regulated by a 9-foot variable-speed fan and manually-controlled dampers. At the discharge end of the kiln is a baffled steel dust-chamber through which the fan draws the kiln gases at the rate of 80,000 cubic feet per minute. A 120-foot steel flue leads back from the fan to the two original 15- by 155-foot concrete stacks. The flue ends at a breeching connected to both stacks. In the breeching a spray washing system, made by the Yarway Company under William H. Klein patents, removes the small amount of dust lost from the gases and the resulting slush is wasted.

One of the pumps with vertical motor drives used in this plant.

When the kiln was lengthened it was equipped with a new improved Type S Manitowoc Vanderwerp recuperator, which is incorporated in a 13-foot-diameter extension of the 11-foot kiln shell. This design eliminates the external air lines used on older-type recuperators and the cutting and fitting necessary to attach them to the kiln shell. It also provides more grate area without increasing the length of the cooling surface and is particularly adapted to kilns of large capacity. I-beams between the recuperator shell and the plates form the air ducts.

The old coal-mill department was replaced by a Raymond direct-firing bowl-mill with a capacity of 8,000 pounds per hour.

This general view of the plant was taken from the International Bridge to Sarnia, Ontario.



Left to right: C. A. Brown, chief electrician; L. A. Anderson, plant superintendent; T. C. Stringer, chief clerk; Carl Sylvester, master mechanic; G. H. Voelker, chemist.

The plant office is in the old Grand Trunk Railway depot where Thomas A. Edison first worked as a telegrapher.

The direct-firing coal mill which is fed by the belt-conveyor at left.

With all this modern equipment the kiln is setting some records for efficiency and economy of operation. Its output is approaching 100 barrels per hour and this figure is expected to be exceeded soon. The coal rate, which is gradually being lowered, now averages less than 85 pounds per barrel. For short periods figures as low as 74 pounds per barrel have been attained. The coal used has a B.t.u. content of from 12,500 to 12,800. The former exit-gas temperature of 1,200 to 1,300 degrees F. has been lowered to 450 to 500 degrees F.

A short drag-conveyor carries the clinker from the kiln to a bucket-elevator which discharges it into a storage building with a capacity of 40,000 barrels. A 1½-cubic yard overhead crane feeds the clinker and gypsum into bins from which Schaffer Poidometers feed the finish-grinding mills. The three 7-by 26-foot Traylor 3-compartment mills are operated in closed circuit with two Sturtevant 14-foot mechanical separators. Most of the grinding in both departments is done at night.

Two 4-inch Fuller-Kinyon pumps feed the finished cement to 10 concrete silos which, with their star and side bins, have a total capacity of 180,000 barrels. Four packers are used, but the percentage of bulk cement shipments is growing rapidly. About 80 per cent. of the shipments from this plant are now made in trucks.

Loading one of the bulk trucks which deliver much of the cement produced.

The plant location on the shore of the Huron River has historical interest. The present laboratory is on the site of old Fort Gratiot, a Civil War stronghold of which only the foundations remain. Later the Grand Trunk Railway shops were located on this property and the Grand Trunk depot is now used as the plant office. It was in this depot that Thomas A. Edison first worked as a telegrapher and many mementoes of those days remain. This depot was the location of some of the scenes of the recent photoplay *Young Thomas Edison,* which reviewed the youth and early struggles of the great inventor. By a coincidence the company's clay pit is at Smith Creek, 15 miles south of Port Huron, where Edison also worked for a time. The Smith Creek Station has been saved for posterity by Henry Ford, who has it on exhibition in his Greenfield Village Museum.

Dolomite as Source of Refractories

Commercial production of magnesitic-dolomite brick was begun in Canada in 1938, and since the outbreak of the war this industry has reached large proportions, the Bureau of Mines points out. Basic Refractories, Inc., in the United States, has also been manufacturing a basic refractory from dolomite; brucite and serpentine are added to increase the magnesia content, and the lime is converted to the orthosilicate, which is stabilized with chrome ore.

The recent increased demand for steel and other metals has stimulated further research in methods of producing high-grade basic refractories from dolomite. The Standard Lime & Stone Company produces a refractory from the product resulting from leaching the slightly soluble calcium oxide from calcined dolomite with large quantities of water.

Two other processes are now in the pilot-plant stage. One of them involves treatment of the calcined and slaked dolomite with hydrogen sulphide, and extraction of the calcium hydrosulphide with water. In the other method, the calcined dolomite is treated with sugar solution and the resulting calcium sucrate removed in solution. Another process under consideration involves manufacturing refractories from the high-magnesia sludge remaining after the lime content of calcined dolomite is utilized to recover ammonia in the ammonia-soda process for the production of sodium carbonate.

Left: The Burkholder plant with the crushing department in the foreground and the two 750-ton agstone-storage silos in background.

THIS PENNSYLVANIA QUARRY OPERATOR SPECIALIZES IN AGRICULTURAL STONE

THE crushed-stone and agricultural limestone business of David M. Burkholder at his plant near Ephrata, Pennsylvania is the result of 20 years of slow but steady growth and constant adaptation to the conditions in this territory. He started in 1922 with a small quarry and crushing plant, where the stone was loaded by hand into cars. Later a better quarry was opened across the highway from the plant and in 1928 steam-shovel loading was adopted and truck haulage replaced the cars. The plant capacity was increased by the installation of a larger primary crusher at the same time and of a larger secondary crusher in 1930. In 1939 a bridge was built so the trucks now go under the state highway between the quarry and the plant.

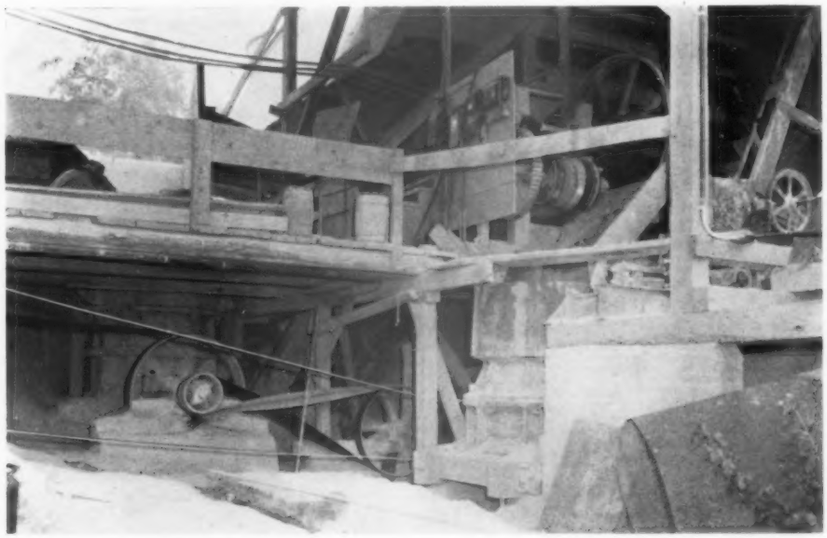
For some time it had been apparent to Mr. Burkholder that there was no great future for the sale of crushed stone alone in this territory. There are many other plants operating within a relatively small area and because this is a rich farming district there was also little likelihood that any great industrial development might swell the demand. After the stone was tested and found to contain 67 per cent. $CaCO_3$ and 30 per cent. $MgCO_3$ agricultural limestone was selected as the additional product to be made. Late in 1937 a hammer-mill was installed and the 2 tons per hour of agstone produced was stored in a bin. In 1940 a vertical-type roller-mill was put in service to meet the increased demand and the product was fed into concrete silos by a pneumatic conveying system. A bag-packer was also installed. A further increase in demand necessitated the installation of a second mill in 1941 and the making of other improvements. It is now planned to replace the two revolving screens in this plant with two vibrating screens.

The overburden on the deposit averages only about 1 foot in thickness and this is removed in off seasons with the shovel and quarry truck. The quarry face averages 45 feet in height and the north and west faces, totaling 400 feet in length, are now being worked. A Cleveland wagon-drill is used to drill the very hard and solid deposit. Rows of horizontal holes are drilled 1½ and 5½ feet above the quarry floor and a row of vertical holes is drilled from the top. Trojan 40- and 60-per cent. explosives are detonated by a battery. From 5,000 to 10,000 tons of stone is brought down at one time. Some secondary shooting is necessary and block-holes are drilled with jack-hammers using Timken detachable bits. The air for drilling is supplied by a Schramm portable gasoline compressor.

One of the two mills which make agricultural limestone from crushed stone.

The stone is loaded by a Thew Lorain 60 gasoline shovel with a 1-cubic yard dipper into an International 6-ton truck which hauls it to the plant. The stone is discharged on a Telsmith reciprocating feeder which discharges it into the 13-inch Telsmith primary gyratory crusher. A bucket-elevator feeds the stone to a 5- by 20-foot Link-Belt revolving screen which is equipped with an outer jacket. The minus-½-inch stone containing some dirt drops into a bin and is sold for topping driveways, etc. When road ballast is being produced the required size is diverted into another bin for truck loading.

All the stone over ½ inch in size from this screen usually goes into a third bin from which it is fed by a



In this view, from left to right, are the 13-inch primary crusher, the 5-inch secondary crusher, and the roll reduction crusher.

belt-conveyor to the 5-inch Telsmith secondary gyratory crusher. A bucket-elevator feeds this stone to a second 5- by 20-foot Link-Belt revolving screen, which makes two sizes of stone—usually 1¼- and ¾-inch—which drop into

The 4-inch pump which feeds agstone to silos. The compressor is in background.

bins. The minus-½-inch stone goes to a 4- by 6-foot Telsmith 2-deck vibrating screen which makes ½- and ¼-inch products and dust. Each of these products goes to a separate compartment of the 400-ton bin. The oversize from the second revolving screen is carried by a belt-conveyor to a New Holland roll-crusher, the product of which goes to the elevator ahead of this

The 2-spout packer used for bagging agricultural limestone.

screen. Trucks can be loaded under all these bin compartments. Some is also stock-piled, and a Byers ⅝-cubic yard gasoline shovel is used to load it into trucks.

The newest of the two Bradley Junior Hercules mills is usually fed through chutes from the ¾- and ½-inch stone bins. The other Hercules mill is usually fed from the ½- and ¼-inch stone and dust bins. These mills are driven by 100- and 75-horsepower motors, respectively and have automatic controls which change the rate of feed to them with variations in motor loads. The product of both mills is carried by an inclosed vertical bucket-elevator to a 600-ton bin from which it can be loaded direct into trucks or to a Bates 2-bag packer. It can also be fed to a 4-inch Fuller-Kinyon Type C pump which transfers the agstone into the two reinforced-concrete storage silos. Each silo is 43 feet high and has an interior diameter of 18 feet and a capacity of 750 tons. At present agstone is loaded into trucks from the silos through Beaumont-Birch rotary gates. Some method for feeding agstone from the silos back to the packer is to be installed. Air for the Fuller-Kinyon pump is supplied at 15 pounds pressure at the rate of 198 c.f.m. by a Fuller rotary compressor driven by a 15-horsepower motor.

The crushed-stone plant now has a capacity of 50 tons per hour when ballast is being produced and 30 tons per

One of the limestone spreaders in use on a company truck.

hour when making the normal range of crushed-stone sizes. Each of the two grinding mills produces 6 tons per hour of agricultural limestone, which will all pass through a 20-mesh screen and 60 per cent. through a 100-mesh screen. The mills are run at full capacity from April 1 to about June 1 and from August 15 to about October 15, the seasons of greatest demand. At other times the mills are run only when necessary to keep the silos full.

The rotary compressor which supplies air for the pumping system.

A truck-load of stone going under highway bridge to plant.

Because of the high demand charges during the day only one mill is run when the crushed-stone plant is in operation which is usually from 6:00 a.m. to 2:00 p.m. After 2:00 o'clock both mills are operated.

The company owns four delivery trucks, three International dump trucks and a Ford 1-wheeler which is used only for bag deliveries.

The company also has three pneumatic-tired Good Roads limestone spreaders which are attached to the dump trucks and are furnished free of charge to customers. During rush seasons as many as 10 additional trucks are hired.

All bulk shipments of crushed or pulverized stone are weighed on a Fairbanks truck scale. In 1940 about 15,000 tons of agstone was sold and this figure was exceeded considerably in 1941. Shipments within a radius of 20 miles were almost entirely in bulk while those made to greater distances were about 75 per cent. in bags.

The shaft behind these two Mack dump trucks is the entrance to the new limestone mine of the Pittsburgh Plate Glass Company near Barberton, Ohio, which, when complete, will be the deepest limestone mine in the world extending down almost a half-mile. The trucks are being used for the removal of overburden and general utility work as sinking of the shaft progresses.

Heat Recovery with the Air-Quenching Cooler

By A. W. CATLIN

Engineer, Manitowoc Engineering Works

IN cooling Portland-cement clinker to grinding temperature, employing the air-quenching cooler accompanied by heat recuperation, the performance resolves itself into a two-stage operation regardless of our intentions or wishes in the matter. And when this operation is properly carried out, it will be found that high efficiency in the heat transfer from the clinker to the combustion air is the natural result, while, concurrently, the cooling effect is equally satisfactory.

This statement is prompted mainly by reason of the fact that it is sometimes suggested that when blowing a given volume of cooling air through the bed of clinker on the first cooling stage, it is advantageous, from the standpoint of heat recovery, to discharge this clinker in a red-hot condition rather than black, on the assumption that the higher the mean temperature of the clinker, the higher the resultant preheat in the air volume. Such specious reasoning may readily be refuted and it would be correct to say that the lower the temperature of the clinker being discharged, the higher the preheat. Naturally, when we discharge clinker at a relatively low temperature, we have removed more of its heat than would be the case if we were to discharge it at a higher temperature, and since this heat is imparted for the most part to the combustion air, we have necessarily obtained a higher preheat. Ordinarily one would be reluctant thus to elaborate the obvious, and the excuse for doing so in this instance is that the misconception just mentioned is more prevalent than might be expected.

It may be mentioned also in this connection that the cooling effect on the first cooling stage may be augmented through the sacrifice of more important operating considerations by placing the burning zone further back in the kiln beyond the proper location, thereby obtaining a slow cooling effect prior to the application of the air blast, which practice certainly is not to be recommended.

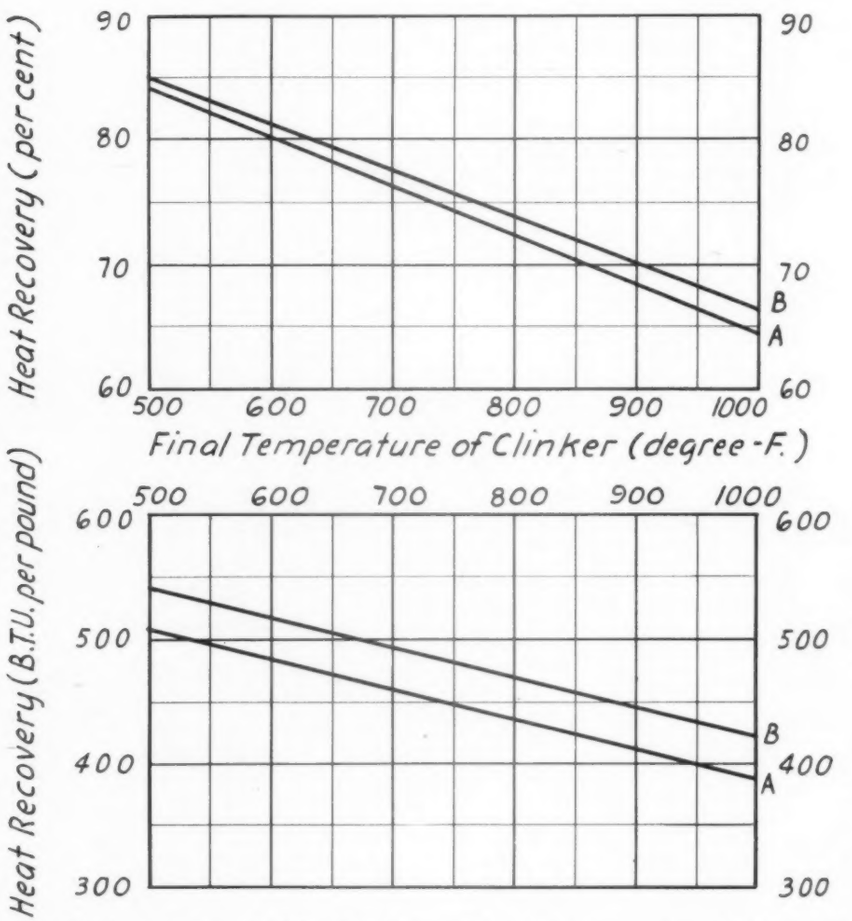
Obviously, the reason for carrying out the cooling operation in two stages is the fact that the sensible heat recovered from the clinker is in the shape of preheat in the combustion air volume and since this air volume is preferably limited to the amount required to burn the fuel in the kiln, we can transfer to this air only as much heat as may be picked up in the process of passing the air through the clinker load in the first cooling stage, leaving the remaining heat to be removed in the second cooling stage. It is, for the purpose of this discussion, a matter of indifference as to how the final cooling of the clinker is accomplished, since this final-stage performance has no direct bearing upon what precedes it.

It would serve no useful purpose to use excess air in the kiln simply to carry the first stage cooling to a lower degree than otherwise would be attained, as the additional cooling effect resulting from this practice would be nullified by the immediate lowering of thermal efficiency. It may be remarked in passing that a properly designed air-quenching cooler does not call for the employment of excess air in the kiln beyond the theoretical requirement to burn a given fuel. Admittedly, a slight excess to insure complete combustion may be found advisable. Flue-gas analyses in such cases need not necessarily indicate more than about 0.3 per cent. oxygen.

A question frequently asked is how much of the initial heat of the clinker is it possible to recover in the shape of preheat imparted to the combustion air? When we attempt to forecast results, we can, of course, approach the subject from the theoretical point of view but we are immediately confronted by difficulties arising from the fact that we are dealing with numerous variables which make it quite impossible to calculate the results with any degree of accuracy.

Among these variables may be men-

(Continued on page 42)



A—Initial temperature of clinker 2,400 degrees-F. B—Initial temperature of clinker 2,500 degrees-F.

★ ★ ★ ★ ★

The world's best investment. . . .
United States Defense Bonds

Well-Planned Series of Printed Forms Simplifies Business of Record Keeping

By ROYAL E. FOWLE

Engineer and Production Manager
Granite Rock Company

CLEAR and correctly kept records are an essential part of any well-conducted business. A few of the forms used by the Granite Rock Company of Watsonville, California are presented with the thought that they may be useful to other aggregate producers.

All producers of aggregate realize the importance of the correct reception of the customer's order by the order clerk; its correct transmission to the shipping clerk, followed by its accurate filling and shipping. Record Forms 1 and 2 are useful in accomplishing these steps.

A clear, easily kept and easily read daily shipping report (Form 3) along with a customers' shipment notification card (Form 4) are desirable. A complete job and mix record (Form 5), a sieve-analysis record (Form 6) along with facts pertaining to samples and test data (Form 7) are valuable.

Performance records and data cards on screen cloth (Form 8), on conveyor, elevator and drive belts (Form 9), and on wire ropes (Form 10), give information for determining, on a cents-per-ton basis, the most economical sources for the purchase of replacements.

GRANITE ROCK COMPANY Nº 410

SHIPPING INSTRUCTIONS

IF THIS RECORD IS IN ERROR - PHONE WATSONVILLE 150 IMMEDIATELY

NAME OF CUSTOMER

DATE	THEIR ORDER NUMBER	DESTINATION

NAME OF PERSON GIVING INSTRUCTIONS NOTED BELOW — TIME A.M. P.M.

THESE ARE THE ORIGINAL INSTRUCTIONS ON THIS ORDER

THESE INSTRUCTIONS SUPERSEDE INSTRUCTIONS GIVEN ON SHEET_____

INSTRUCTIONS

NOTE BUNKER NUMBERS — KIND OF CARS — DATES TO BE SHIPPED
BE SURE TO NOTE ANY SPECIAL CONDITIONS OF ANY NATURE

BE SURE TO REPEAT THESE INSTRUCTIONS BACK FOR CONFIRMATION

PHONED QUARRY BY | REPEATED BACK | THIS MESSAGE WAS RECEIVED BY PHONE_____ TELEGRAPH_____ VERBALLY IN PERSON_____

Form 1. An order clerk in the main office places order and full shipping instructions on this sheet as information is being received from the customer, who receives a carbon copy. This arrangement assures the correct reception of the customer's order.

CLEAR / CLOUDY / RAIN

GRANITE ROCK COMPANY
WATSONVILLE, CALIFORNIA

_____ DAY _____ MONTH _____ 19__ DATE YEAR

ORDER NUMBER	CONSIGNEE	DESTINATION	NUMBER OF CARS	TONS TO SHIP	SIZE	BUNKER NUMBER	MIX	RECLEANING DATA	TYPE OF CAR	CARS OR TONS SHIPPED	BALANCE OF ORDER	

Form 2. An order clerk then fills in complete information on this sheet and phones it to the plant loading department clerk, who fills in an identical sheet. The quarry is located eight miles from the main office. The clerks check back to assure the correct transmission of orders. Every effort is made to receive the customer's orders correctly and to have complete information as to mesh size. The bunker numbers for these various sizes are noted along with mix proportions, resizing and washing data. The ordering of rock sizes by number, such as 1, 2, 3 or 4 is not satisfactory as such nomenclature leads to confusion.

DAILY SHIPPING REPORT—GRANITE ROCK COMPANY QUARRY, LOGAN, CALIF., _____ 193__

Shipping Receipt No.	Car Initial	Car Number	Type of Car	WEIGHTS SHIPPED From Bunkers	WEIGHTS SHIPPED From Storage	Size	Bunker No.	Price	Order No.	CONSIGNEE	DESTINATION
BEOT FORWARD											

Form 3. The loading-department clerk fills in this daily shipping report for return to the main office.

Date ..... 19....

We shipped to you today to:

.....

the cars listed below. Bills of Lading with weights will follow promptly.

Car No.	Material	Car No.	Material

WATSONVILLE PRESS A2565

THANK YOU

GRANITE ROCK CO.

Telephone Watsonville 150

Watsonville, California

Form 4. The shipping clerk fills in and mails this form, printed on a government post-card, to the customers on the shipping list.

JOB AND MIX RECORD No .....

CONSIGNEE ..... DATE .....

DESTINATION ..... ORDER NUMBER ..... JOB .....

CONTRACTOR ..... ENGINEER / ARCHITECT ..... TESTING LABORATORY .....

NAME OF MATERIAL ..... SIZE OF MATERIAL ..... BUNKER NUMBERS .....

TYPE CAR ..... MIX .....

RECLEANING DATA ..... WASHED YES ☐ NO ☐

PLANT SCREENS .....

PLANT SCREEN CLOTH OPENINGS ..... REMARKS .....

SEE BACK OF CARD FOR SIEVE ANALYSIS WAT PRESS 15348

Form 5. This record card is filled in for each job and customer. It is not only a valuable record but assures that the customer will receive the same material on re-orders.

SIEVE ANALYSIS No .....

SIZE OF OPENING	OPENING ○	OPENING □	% PASSING	SPECIFICATIONS	SIZE OF OPENING	% PASSING	SPECIFICATIONS
4"							
3½"					3		
3"					¼" ○ □		
2½"					4		
2"					8		
1¾"					10		
1½"					14		
1¼"					16		
1"					20		
⅞"					28		
¾"					30		
⅝"					40		
½"					48		
⅜"					50		
3					80		
¼"					100		
4					200		
8					Pan.		
10					Wash		
F. M.					F.M.		

REMARKS: .....

By .....

Form 6. The sieve analysis is kept for each job and customer. It is recorded on the back of Form 5, the "Job and Mix Record" card.

GENERAL OFFICES WATSONVILLE, CALIFORNIA PHONE WATSONVILLE 150

GRANITE ROCK COMPANY
CRUSHED ROCK AND WASHED SAND

ARROWHEAD GRAVEL COMPANY
WASHED GRAVEL AND SAND

QUARRY AND PLANT AT LOGAN 95 5 MILES SOUTH OF SAN FRANCISCO ON SOUTHERN PACIFIC LINES

PLANT PHONE WATSONVILLE 150

GRAVEL PLANT AT ALAMITOS 4 6 MILES SOUTH OF SAN JOSE ON SOUTHERN PACIFIC LINES

PLANT PHONE BALLARD 1001

TEST NO. .....
BUNKER NO. .....
SIZE .....
DATE ..... 19....

SIEVE ANALYSIS AND DATA
LOGAN PLANT ARROWHEAD PLANT

Size of Material .....
Name of Material .....
Bunker Number .....
Date Sampled 19
Date Tested 19
Weight of Sample .....
Sample From .....
Sample by .....
Test by .....
Job .....
Engineer or Architect .....
Contractor .....
Copies to .....

Specific Gravity ..... Absorption ..... %
Silt by Vol. ..... %. By Wt. ..... %
Av. Wt. per Cu. Ft. Damp Loose ..... Lbs.
Moisture ..... %. Bulking ..... %
Av. Wt. per Cu. Ft. Dry Loose ..... Lbs.
Voids (Dry Loose) ..... %
Av. Wt. per Cu. Ft. Dry Rodded ..... Lbs.
Voids (Dry Rodded) ..... %
Absolute Vol. Loose ..... Rodded .....

PLANT DATA

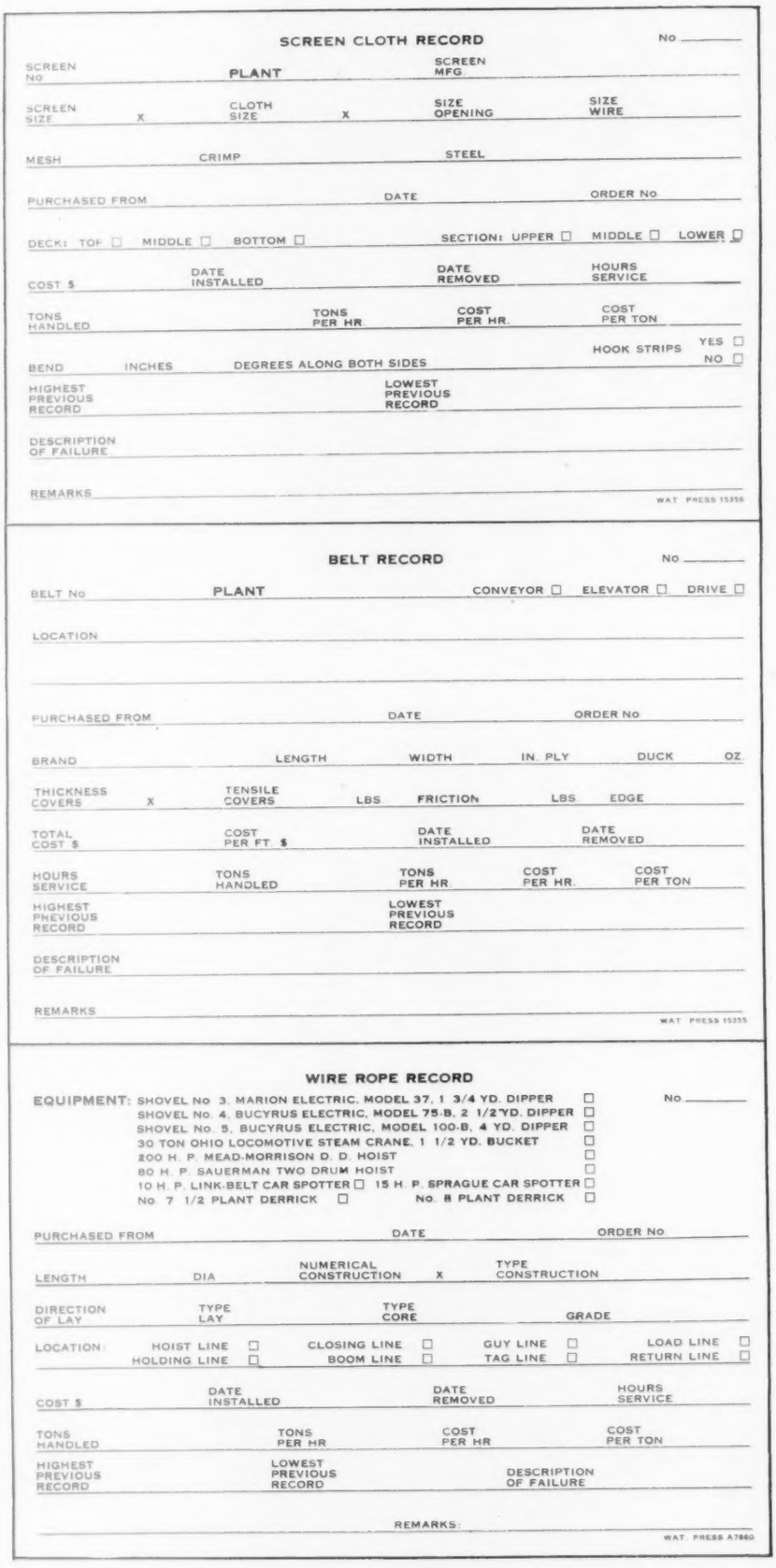
Screen .....
Openings ..... Wire .....
Gate Settings .....
Remarks .....

Size of Opening	Kind ○	Kind □	Weight Retained		% Retained	% Passing	Specification	Size of Opening	Weight Retained		% Retained	% Passing
3"								No. 3				
2½"								¼"				
2"								No. 4				
1½"								8				
1¼"								10				
1"								14				
¾"								20				
⅝"								28				
½"								30				
⅜"								40				
No. 3								48				
¼"								50				
No. 4								80				
No. 8								100				
No. 10								No. 200				
Pan								Pan				
F. M.								F. M.				

REMARKS: .....

BY .....

Form 7. This record form is filled in at the testing laboratory, where it is kept. A copy is forwarded to the order clerk who uses some of the information for the Sieve Analysis record. Copies are also forwarded to the engineer, architect, contractor or others interested. (The Granite Rock Company no longer operates the Arrowhead Gravel Company as it appears here.)



SCREEN CLOTH RECORD

No ____

SCREEN No. | PLANT | SCREEN MFG.

SCREEN SIZE x CLOTH SIZE x SIZE OPENING | SIZE WIRE

MESH | CRIMP | STEEL

PURCHASED FROM | DATE | ORDER No.

DECK: TOP ☐ MIDDLE ☐ BOTTOM ☐ | SECTION: UPPER ☐ MIDDLE ☐ LOWER ☐

COST $ | DATE INSTALLED | DATE REMOVED | HOURS SERVICE

TONS HANDLED | TONS PER HR. | COST PER HR. | COST PER TON

HOOK STRIPS YES ☐ NO ☐

BEND INCHES | DEGREES ALONG BOTH SIDES

HIGHEST PREVIOUS RECORD | LOWEST PREVIOUS RECORD

DESCRIPTION OF FAILURE

REMARKS

WAT. PRESS 15356

BELT RECORD

No ____

BELT No. | PLANT | CONVEYOR ☐ ELEVATOR ☐ DRIVE ☐

LOCATION

PURCHASED FROM | DATE | ORDER No.

BRAND | LENGTH | WIDTH | IN. PLY | DUCK | OZ.

THICKNESS COVERS x TENSILE COVERS | LBS. FRICTION | LBS. EDGE

TOTAL COST $ | COST PER FT. $ | DATE INSTALLED | DATE REMOVED

HOURS SERVICE | TONS HANDLED | TONS PER HR. | COST PER HR. | COST PER TON

HIGHEST PHEVIOUS RECORD | LOWEST PREVIOUS RECORD

DESCRIPTION OF FAILURE

REMARKS

WAT. PRESS 15355

WIRE ROPE RECORD

No ____

EQUIPMENT:
SHOVEL No. 3, MARION ELECTRIC, MODEL 37, 1 3/4 YD. DIPPER ☐
SHOVEL No. 4, BUCYRUS ELECTRIC, MODEL 75-B, 2 1/2 YD. DIPPER ☐
SHOVEL No. 5, BUCYRUS ELECTRIC, MODEL 100-B, 4 YD. DIPPER ☐
30 TON OHIO LOCOMOTIVE STEAM CRANE, 1 1/2 YD. BUCKET ☐
200 H. P. MEAD-MORRISON D. D. HOIST ☐
80 H. P. SAUERMAN TWO DRUM HOIST ☐
10 H. P. LINK-BELT CAR SPOTTER ☐ 15 H. P. SPRAGUE CAR SPOTTER ☐
No. 7 1/2 PLANT DERRICK ☐ No. 8 PLANT DERRICK ☐

PURCHASED FROM | DATE | ORDER No.

LENGTH | DIA | NUMERICAL CONSTRUCTION x TYPE CONSTRUCTION

DIRECTION OF LAY | TYPE LAY | TYPE CORE | GRADE

LOCATION: HOIST LINE ☐ HOLDING LINE ☐ | CLOSING LINE ☐ BOOM LINE ☐ | GUY LINE ☐ TAG LINE ☐ | LOAD LINE ☐ RETURN LINE ☐

COST $ | DATE INSTALLED | DATE REMOVED | HOURS SERVICE

TONS HANDLED | TONS PER HR | COST PER HR | COST PER TON

HIGHEST PREVIOUS RECORD | LOWEST PREVIOUS RECORD | DESCRIPTION OF FAILURE

REMARKS:

WAT. PRESS A7860

Forms 8, 9 and 10. A performance record is kept on all screen cloth, on all conveyor, elevator and drive belts, and on all wire rope. Record cards 8, 9 and 10 are used to show this information along with complete data pertaining to source, construction, location, etc. These records are valuable when ordering replacements, as the one best suited for a particular service can be readily determined.

Heat Recovery *(from page 39)*

tioned such factors as the initial temperature of the clinker, the point where the heat exchange is effected (that is, whether inside or outside the kiln), radiation losses, and the size of the clinker produced. One of these factors alone, namely, the size of the clinker, has such a pronounced influence on cooling as to render our calculations useless. For example, a clinker nodule 1 inch in diameter contains, at a given temperature, 64 times as much heat as does a nodule ¼ inch in diameter, yet the larger of the two has only 16 times the superficial area of the smaller from which this heat may be dissipated.

Since no cement kiln will regularly produce a uniform, constant size of clinker for any long period, it follows that any fine-spun calculations of cooling effect are of no practical value and we must fall back on experience.

In an operating plant, however, it is a comparatively simple matter to ascertain with a fair degree of accuracy the initial and final temperatures of the clinker passing through the first, or recuperative, cooling stage. Given the initial temperature, the sensible heat content in B.t.u. may readily be calculated for a unit of weight, and, also knowing the final temperature, the heat content at this point may likewise be determined. The difference between these two values necessarily represents heat recovery, subject, of course, to the deduction of radiation losses which, with proper design, should be slight.

Upon referring to the diagrams it will be observed that the lines indicating heat recovery are based on initial temperatures of 2,400 and 2,500 degrees F., with varying degrees of cooling ranging from 500 to 1,000 degrees F. The results are indicated in percentages of the total heat recovery, also recovery in B.t.u. per pound of clinker.

A good average performance figure representing the final temperature of the clinker from the first cooling stage of an air-quenching cooler has been found to be in the neighborhood of 800 degrees F. Figures as low as 565 degrees F. have been recorded under good operating conditions, but a temperature as low as this is of such rare occurrence that it does not offer a criterion.

The heat recovery with an air-quenching cooler is perhaps higher than would be expected at first glance. For instance, with an initial temperature of 2,500 degrees F. and a final temperature of 800 degrees F. we find that approximately 74 per cent. of the initial heat of the clinker has been removed.

Rigid Control Exercised in Preparing Blended Molding Sand for Foundries

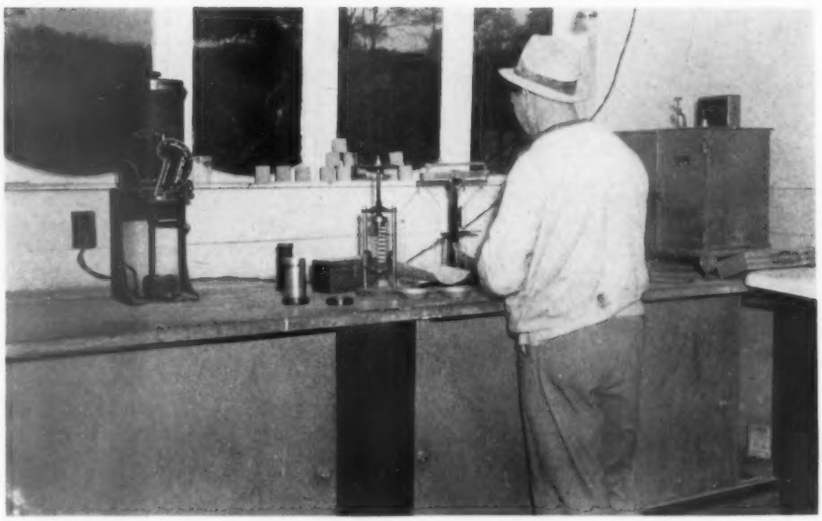
By HARRY F. UTLEY

MOLDING-SAND demand rose sharply in 1941 as foundries throughout the country converted huge amounts of iron and steel into the implements of defense and war. The increased demand began to be felt in 1940, when shipments of molding sand exceeded those for the preceding year by 34 per cent.

Because requirements vary widely among foundries, the demand for specification molding sands has grown rapidly. Larger foundries have long maintained equipment for blending naturally-bonded sands with clays to suit their needs. Hundreds of smaller foundries, however, usually shopped around for a sand of about the right proportions and used it for all their work. However, progressive industrial-sand producers, sensing this market for "tailor-made" sands, are now able to supply any foundry requirement by blending shipments to order.

A new plant which produces "Bond-Blended" sand to meet the specific needs of the foundry industry went into operation this year at the Lake Cicott, Indiana deposits of the Great Lakes Foundry Sand Company of Detroit. This plant is now featuring laboratory-controlled sands of guaranteed strength, fineness, permeability, and clay content. Its sand technicians are available for consultation with foundrymen for advice on improving foundry practice by using the proper sand mixtures. The Lake Cicott plant is operated under the supervision of Warren E. Stuart, who has been close to the molding-sand industry for a half-century. As a matter of fact, the original 70-acre deposit owned by the company at Lake Cicott was once his farm and he still resides in the Stuart farm-house on the property. For years, until the new blending plant was established, the company shipped only naturally-blended sand. Although considerable tonnage of the natural product is still sold, the trend is toward the use of the "tailor-made" product.

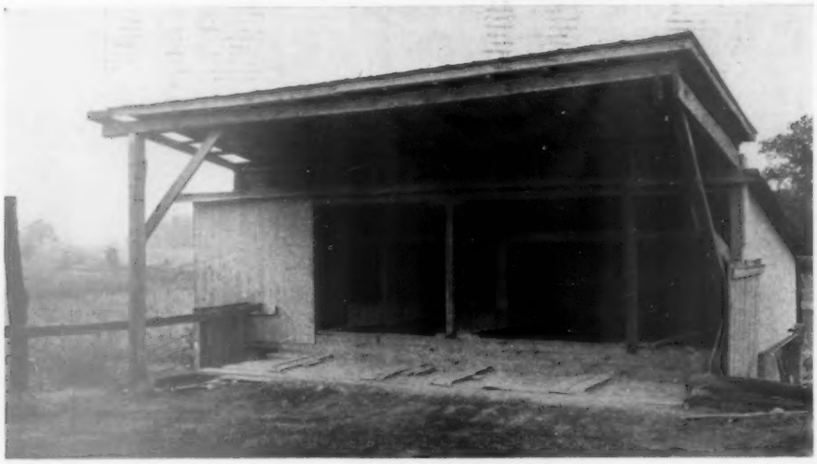
Sand of about 75 A.F.A. fineness is obtained at several locations near the processing plant and is excavated by a ⅜-cubic yard Byers Bearcat shovel, or by a Mead-Morrison hoist and L. P. Green 1-cubic yard drag-scraper. The overburden is slight, never exceeding



The plant laboratory and some of the equipment.

The plant and portable loading conveyor.

A view showing character of the sand deposit.

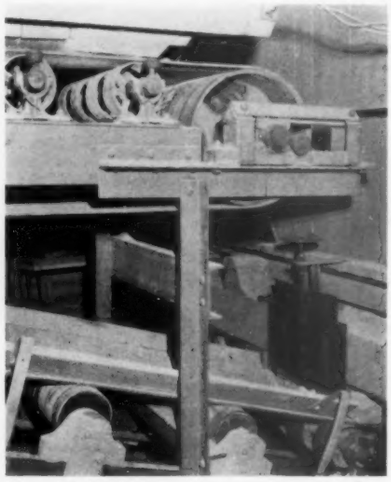


Storage bins for sand and clay.

more than a foot of vegetation and top soil. No pebbles occur in the deposit and the only oversize material revealed in excavating consists of Indian relics—arrowheads, tomahawks, stone hatchets, etc.—harking back to the days when a tribe of Pottawattomie Indians lived on and near the shores of Lake Cicott. Pieces of clay pots used in Indian cookery are also turned up occasionally. Mr. Stuart explains that the Pottawattomies dug pits in the sand, lined them with wet clay, and built fires in the pots to heat stones for cooking, the heat baking the clay almost to porcelain-like hardness.

The sand is brought to the plant in dump-trucks which run up an earthen ramp and discharge their loads into a sand bin of 100-ton capacity. The clay deposit is about a mile distant. This material, about 200 A.F.A. fineness, is found in a relatively dry state and is trucked to the plant and passed through a Stedman double-cage disintegrator to break up the lumps. The cages, one within the other, are driven in opposite directions by 40- and 50-horsepower G.E. motors through Texrope strands. The clay is then stored in a 50-ton bin alongside the sand bin. The distintegrated clay is temporarily being carried to the bin by dump-truck until an elevator can be installed. A third bin of 50-ton capacity is used for the "blue," or refractory, clay which is shipped in from the company's pits at Hillsdale, Indiana. The bins are built of tongue-and-groove pine boards and are lined with steel.

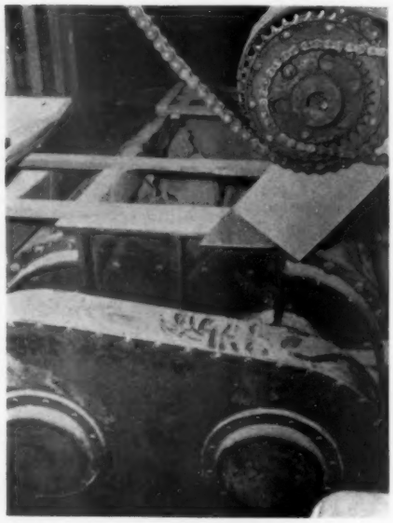
Double-cage disintegrator which breaks up lumps of clay.



Right—Feed gate on sand hopper. Clay feeder above.

The sand and clay are blended by volume and checked by weight. Gates at the bottoms of the bins are set by inserting numbered hardwood blocks of different thicknesses to allow a predetermined amount of material to fall on a 34-foot belt-conveyor which carries the materials to a Baker-Perkins 60-ton continuous sand muller. The sand technicians at Detroit specify the composition of the various mixtures on order and these figures are transferred to a blackboard on a wall in the plant for quick, easy reference. Occasionally a box is cut in at the discharge point over the muller to take a representative sample of the material for analysis and weighing in the plant laboratory located in a room adjoining the plant.

The muller consists of two opposed alloy-steel screws which mix and blend the material thoroughly. About 7 per cent. of water by weight is added through a spray over the mixing screws. A G.E. 75-horsepower motor drives the muller through a Palmer-Bee speed-reducer. The conveyor and a feeder beneath the local-clay bin are driven from the same motor through sprockets and chain.

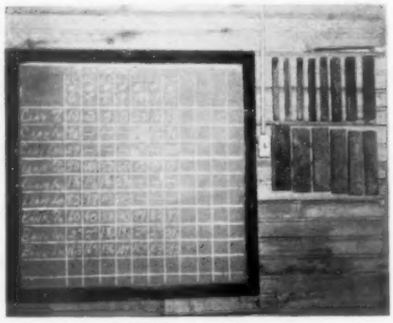


A view of the continuous sand muller.

As the finished blended mixture is discharged from the muller it is loaded directly into cars by a Northern 45-foot portable belt-conveyor.

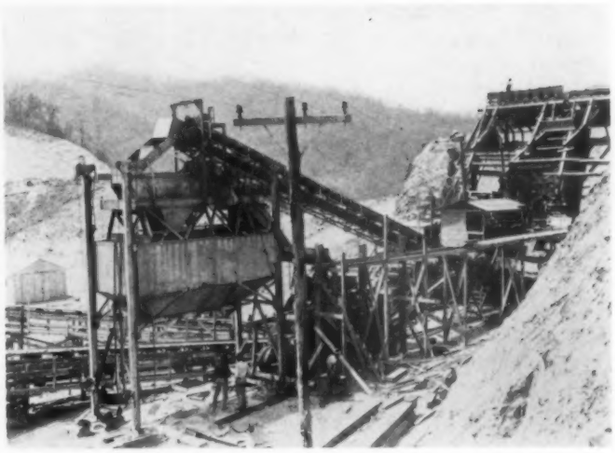
The laboratory at the plant is equipped with the latest devices for making quick and accurate analyses. A Thelco electric oven is used for drying samples to determine their moisture content. A Dietert rammer makes uniformly-tamped test cylinders of sand samples. The cylinders are broken in a small compression-testing machine and are tested for permeability in a

(Continued on page 46)



Black-board mix chart and, at right, feed-regulator blocks.

Portable Units Help Supply Crushed Aggregates for Nantahala Power Dam



Portable plant re-assembled as unit of twin-crusher plant. These two views illustrate how this was worked out.

TO PREPARE concrete aggregates and to provide part of the needed 2,000,000 cubic yards of rock for a huge power dam the Utah Construction Company utilized a truck-mounted, two-unit, Cedar Rapids portable crushing and screening plant on its Nantahala, North Carolina, contract. The assembly of primary and secondary crushers, sand rolls, and screens was used in one location for about six months and then moved, chiefly on its own trucks, to a position near a large quarry, where it was installed as a unit of a larger combination plant to make materials to go in the main dam.

The entire project is under construction for the Nantahala Power & Light Company, a subsidiary of the Aluminum Company of America. A crystal-clear mountain stream is to be imponded in a natural valley reservoir at about 3,000 feet above sea level and conducted under adjacent mountains through 6 miles of tunnel and heavy pipe-lines. At the lower end of the waterway, a concrete power-house, set in solid rock, houses a 60,000-horsepower turbine which develops the full head of the project—close to 1,000 feet lower in elevation than the top of the dam.

Concrete was required for the diversion tunnels, control shaft and house, the intake structure and valve chamber, for spillway gate structures and for pipe-line covering and support structures.

Some of these structures were scattered and remote from the job as a whole, which necessitated a mobile plant for aggregate production, yet one which could be expected to provide a suitable crushed-rock product to be stock-piled in 10,000-cubic yard lots, more or less, near the source of supply. The impounding dam required a clear sharp sand for "filter zones" or drainage layers, which was also secured from the same source of supply and produced by the portable plant.

The tunnels on this project are driven through solid rock. The excavation from these bores provides tunnel "muck" which, when crushed and sorted, is a source of concrete aggregate and prepared rock for the dam and general use. Road-surfacing material was needed in voluminous quantities from the beginning of the job. Only one mountain road with numerous small wooden bridges was at first available for movement of the heavy tunnel and dam construction equipment, such as large power shovels, air-compressors, locomotives, and large shipments of bulky materials. No close natural deposits of sand or gravel were economically available, so concrete aggregates and road materials were of necessity produced as near the proposed structures as was possible. Now, some 20 miles of roads and numerous working areas have been developed. These are surfaced with base and fine courses of crushed stone and are proving their worth by reducing maintenance bills for the trucking equipment and by providing quick and safe access to the many locations where work is in progress.

By PHILIP H. KLINE
Job Engineer, Utah Construction Co.

At one point the tunnel alinement crosses a creek, making two portals or working faces for tunnel driving. Being more centrally situated than the portals at each end of the job, this site was chosen for the first location of the Cedar Rapids plant. The products required varied from ¼-inch sand, through ¾-, 1½- and 2-inch concrete aggregate, to crusher-run material for road surfacing. The crusher feed was supplied by rock as blasted in the tunnels, hauled in 5-cubic yard cars and dumped into a steel-lined wooden hopper, built on cribs to fit the prevailing tunnel-track. The start of installation activities is shown in one of the pictures, wherein the truck units are "spotted" according to designs furnished by the Iowa Manufacturing Company.

A 42-inch by 10-foot feeder and a 25- by 40-inch roller-bearing jaw crusher with V-belt drive are carried on twelve 10.00 by 20.00 heavy-duty pneumatic tires, the trailer-type chassis being equipped with air brakes. The weight of this unit is about 34,000 pounds. The processing equipment is powered by a 100-horsepower, 440-volt motor. A 30-inch conveyor, 70 feet long, carried the product from this primary crusher to a 2½-deck vibrating screen mounted on the top of a 3-compartment bin, supported on H-columns. This bin is equipped with winches and cable-raising devices, which allow assembly of the screen at ground level, and self-contained hoisting arrangements. Chutes and by-passes were arranged to carry the oversize of any screen deck to a secondary crusher and sand-roll unit, similar to the first unit.

The secondary crusher is a 10- by 36-inch roller-bearing jaw-crusher with V-belt drive. The sand-rolls are 40- by 20-inch units furnished with smooth shells which were later hard-surfaced. These units are driven by a 125-horsepower, 440-volt motor. A return or circulating conveyor, 24 inches by 30 feet, receives the product of the secondary crusher and/or the rolls and delivers it to the conveyor leading to the screens. This closed circuit enabled the operator carefully to control his product and the rate of output, and to regulate his screen loads according to the primary feed and the bin storage on hand.

One operator and two helpers produced over 32,000 tons of product during a 6-month period, including trial runs, tuning-up and "learning" periods. The maximum production for any shift was limited by the amount of rock coming from the tunnel, but it appeared from several long runs that an hourly output of 75 tons might be reasonably expected when producing the 1½-, ¾- and ¼-inch sizes. No major mechanical difficulties were encountered in the first few months of operation. Screen-cloth wear was about average, considering the abrasiveness of the hard sandstone being processed.

Starting to set up the plant. Main jaw-crusher unit in foreground being towed into place near log crib.

The secondary crushing unit and V-belt drive.

The aggregate was stock-piled in ground-level storage bins close to the sites of the proposed concreting. These storage piles were ingeniously devised by the general superintendent to take advantage of the sloping hillsides. Log cribs were thrown up by experienced woodsmen to a height even with the top of a weigh-batcher bin hopper. Dirt embankments extended the retaining area of the cribs, and were formed by bulldozing the soft earth material from behind the crib. This increased the live storage which could be reached by a small crane traveling short distances on the top of the crib. The storage pile separation of sizes was obtained by inexpensive 2-inch board fences that were erected as the piles grew higher. A surcharge of aggregate was slope-dumped above the piles, where it could be easily reclaimed by a tractor pushing the material down into the reclaiming area.

When the requirements for these locations had been met, the plant was partially dismantled and towed to the main dam quarry. This plant was reassembled as part of the larger set-up, which will be described in a later article. The first use, here described, was directed and the equipment installed and operated by W. B. Hawkins as general foreman, under the supervision of G. R. Putnam, general superintendent. S. E. Bittner is resident engineer for the Nantahala Power & Light Company and J. P. Growden is chief hydraulic engineer for the Aluminum Company of America.

Batcher bin and crane reclaiming aggregates from stock-piles.

Molding Sand *(from page 44)*

Dietert permeability machine. These physical properties are extremely important in molding sands. The compressive strength indicates quite accurately the bonding quality of a sand, the amount of clay present and moisture content both affecting this factor. Permeability is the property which allows the passage of the gases formed when the casting is poured, too much clay decreasing the permeability. Fineness of grain size, sintering point, and durability are other properties which must also be kept under close control.

Price-Fixing and the Anti-Trust Laws*

Part I—Direct Price-Fixing Activities: Prices—Manufacturers' Groups *(Continued)*

By GEORGE H. SAGE
of the Chicago Bar

A2—Jobber-Competitor Resale Price Control

The individual manufacturers in a group engaged in price-fixing activities may sell to certain classes of customers who compete with the manufacturers themselves in the sale of goods. One class of customers may include other manufacturers in the same or related industries who purchase for purposes of resale. Other manufacturers in the same industry, smaller in size, may lack the necessary production facilities or financial resources themselves to manufacture the particular types of products whose prices have been fixed by the group, especially where the products in question are specialties of one kind or another. Desiring to achieve certain economies in selling and administrative expense, as well as certain selling advantages inherent in a "full-line" of products, nevertheless, or seeking to avoid the competitive handicaps resulting from a "short line" of products (such as inability to service the needs of their own customers or to make shipments in mixed carloads), these smaller manufacturers in the industry may purchase their requirements of the products in question from the manufacturers in the group with whom, incidentally, they also compete in the resale of these same types of products to the dealer trade. Manufacturers in related industries, similarly seeking to achieve the selling and administrative economies and the selling advantages of a "full line" of products and, although possessing the financial resources, unwilling to make any capital investment in manufacturing facilities, may also purchase their requirements of the types of products in question from the manufacturers in the group. These other manufacturers in the same or related industries, although manufacturing various types of products themselves, in their purchases of goods from the manufacturers in the manufacturer group and in their resales of such goods function in the capacity as jobber-distributors of the goods.

Another class of customers to which the individual manufacturers in the group may sell may include jobber-distributors themselves. Jobbers or wholesalers in fact constitute the traditional channels of distribution, buying finished products from the manufacturers, on the one hand, and reselling the goods to retailers, on the other. Only when, in response to economic trends, manufacturers began to sell direct to retailers and retailers began to buy direct from manufacturers did the manufacturers find themselves competing with their own jobber-distributors. In many industries, therefore, manufacturers in selling direct to retailers may actively compete with their own jobber-distributors, displacing them in the channels of distribution only in part. In the gasoline-refining industry, for example, refiners may distribute not only directly themselves to independent filling-station operators but also indirectly through independent jobbers, while the "major" or fully-integrated refiners may even in addition distribute both at wholesale and at retail through their own or controlled filling stations. Still retaining their position, nevertheless, in part at least, in the distribution picture, pure jobbers or wholesalers may in fact in particular industries distribute a substantial part of all the products sold and distributed. Even where many manufacturers, generally the larger ones, in the industry distribute exclusively direct to retailers, other manufacturers, generally the smaller ones, may still continue to distribute in large part through jobbers in order to secure sales advantages in lesser capital investment or greater market coverage at economic cost. In such case the jobber-customers of these latter manufacturers may enter into competition with the direct-distributing manufacturers, if not also their own manufacturer-suppliers.

Whether the jobber-customers of individual manufacturers in the group consist of other manufacturers in the same or related industries or of pure jobbers, or both, the individual manufacturers in the group may be subjected to price competition by these classes of customers. In the case of manufacturer-jobbers the relatively small size of individual companies, the inferior facilities of service, the shorter period of establishment, the less widely-advertised brands, and other factors may well impel certain of these manufacturer-jobbers to solicit sales or to seek to expand their relative market position on a basis of prices below prevailing market prices or the minimum or specific prices fixed by the manufacturer group. In the case of the pure jobbers the intense competition generally prevailing among a relatively great number of competing sellers, especially where many of the sellers are organized to buy and sell on a purely price basis, may well force wholesale prices down below the prevailing market price or the minimum or specific prices fixed by the manufacturer group. Therefore, in the case of either manufacturer-jobbers or of pure jobbers, hereafter described as jobber-distributors, the price structure erected by the manufacturer group may well become considerably weakened by this outside competition and prices dragged down to lower levels. The price-fixing activities of the manufacturer group with respect to the manufacturers in the group, as well as the manufacturers outside the group, may thus well become, in the absence of remedial measures, wholly nullified by the manufacturers' own customers.

To extend its control over manufacturer prices to the resale prices of the jobber-customers of the individual manufacturers in the group, the manufacturer group, acting through the individual manufacturers, may utilize some legal device as the basis of a resale-price-maintenance plan, scheme or system. Although the manufacturer group may operate a strongly-organized and strongly-enforced price-fixing scheme eliminating any direct price competition among manufacturers, these classes of customers of the individual manufacturers competing with the manufacturers in sales to retailers may, unless controlled in their resale prices by the manufacturer group, endanger the effectiveness of the price structure erected by the group. The legal devices that may be utilized for this purpose, the same as those subject to utilization by the individual manufacturer in an individual resale-price-maintenance plan, include the agreement, refusal to sell, agency, and the patent license. The agreement and refusal-to-sell devices will be discussed at this point, the agency and patent-license devices at a subsequent time in connection with the discussion of the patent-license and agency devices as the basis for price-fixing schemes.

The Agreement or Contract Device

The agreement or contract device may be utilized by the simple di-

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rect price-fixing manufacturer group as the basis for a resale-price-control plan imposed upon jobber-customers of the individual manufacturers. Such a legal device is simple and direct in its application. Through the clear and express provisions of a uniform form of contract the manufacturer group can readily indicate to jobber-purchasers its desires on resale-price and selling policy. In practice each manufacturer, acting on behalf of the manufacturer group as a whole, may execute the uniform form of contract with its own individual jobber-customers, the uniform form of contract insuring a concert of policy by each manufacturer.

The provisions of the uniform agreement will consist essentially of obligations imposed upon jobber-purchasers requiring observance of resale prices fixed by the manufacturer group. An illustrative agreement may include an exclusive dealing agreement expressed in the form of a requirement contract in which the manufacturer agrees to sell and the jobber agrees to purchase the entire requirements of the jobber, possibly expressed as requirements to an amount much in excess of the normal requirements of the jobber; the rates of discount from list prices to be granted the jobber; and the terms of payment. In the same agreement may then appear the resale-price-control clause consisting of a provision stating that it is an essential condition of the agreement that the jobber will not directly or indirectly sell or offer for sale any of the goods purchased from the manufacturer at lower prices or upon better or more favorable terms than those shown in a price schedule attached, the intent being to insure the manufacturer against the use by the jobber of the agreement to undersell the manufacturer.

Since the purpose and effect of this type of agreement, obligating jobber-purchasers to buy exclusively from manufacturers in a group and to observe the resale prices fixed by the manufacturer group, is thereby considerable restriction of jobbers with respect to resale prices, it may become necessary for the manufacturer group to exert tremendous business pressure upon hesitating jobbers to force them into the execution of the agreement. The group through its individual manufacturers may, therefore, for example, threaten the individual jobber that unless the jobber executes the agreement the group will not sell goods to it, the group will make it impossible for the jobber to buy the goods in question or to continue in business, and the group will drive it out of the jobbing business and compel it to sacrifice the good-will owned by it and the capital invested by it in the business. To the ordinary individual jobber, fearful for the good-will and capital investment of its business, such threats may be wholly effective in compelling execution of the uniform agreement submitted by the individual manufacturer.

Refusal to Sell The right of refusal to sell, instead of the agreement or contract device, may be utilized by a direct price-fixing manufacturer group as the basis of a resale-price-control plan, scheme or system imposed upon jobber-distributors. Derived from the right of any seller to select its own customers to whom to sell, the right of refusal to sell may prove an effective means by which the individual manufacturer in the determination of its individual pricing policy may establish and enforce a resale-price-maintenance plan on the part of its individual customers. By indicating its wishes to dealers through announcing "suggested" prices, refusing to sell to dealers not adhering to the "suggested" resale prices and selling only to those dealers who do adhere, the individual manufacturer may be able thereby effectively to control the resale prices of its dealers.

As taken over by the manufacturer group in the interest of the group as a whole, the resale-price-control plan based upon the right of refusal to sell may operate upon practically identical lines. At the outset the manufacturers in the group may agree not to sell any jobber-distributors not approved by the group as a group through its central agency, or, expressed conversely, to sell only to those jobber-distributors approved by the manufacturer group as a group. Through this agreement committing each manufacturer to group decision and action, the individual manufacturers in the group sell only those jobber-distributors whose resale price policies meet the group's approval and refuse to sell those jobber-distributors whose resale-price policies do not meet the group's approval, a method of operation, in substance, as above stated, the same as that followed in the case of the individual manufacturer.

In actual operation the group may not directly "suggest" prices but may seek to accomplish the same result less directly through investigations of the resale-price policies of prospective jobbers in connection with granting "approvals." Prior to the approval of sales to any prospective jobber-distributor, the group may make a complete investigation through its field representatives of the resale-price policies, possibly euphoniously described as "business ethics," of the prospective jobber-distributor. Where the jobber-distributor, for example, has made its own prices and policies conform with those prevailing in the industry, such as those of the price leader or leaders, or where the jobber-distributor previously not so conforming has made representations to the group that it would make its prices and policies conform, the approval of the group may automatically follow; but where the jobber-distributor has not so conformed or has failed to make to the group representations of conformity, the approval may equally automatically be denied. The purpose of these prior investigations may be the prevention of "approval" of jobber-distributors likely to resort to "unethical" price-cutting in competition with the manufacturers as well as with other "approved" jobber-distributors. Even following the granting of approval the group may also conduct supplementary investigations of the resale-price policies of the "approved" jobber-distributor, the purpose similarly being to eliminate, through withdrawal of the "approval," jobber-distributors engaging in undue or improper price-cutting. In engaging in these practices the manufacturer group, it may be noted, may not have actually stated to any jobber-distributor nor have threatened that it would not permit manufacturers to sell to any jobber-distributor for failure to maintain proper resale-price policies ("business ethics"), nor may it have actually withdrawn "approval" on this ground from any jobber-distributor previously "approved." The natural consequence of these types of practices by the manufacturer group, nevertheless, may well be the belief acquired by jobber-distributors generally that in order to secure "approval" from the manufacturer group as well as to maintain approval, they must observe "business ethics," *i.e.*, proper resale-price policies.

Although no express or implied agreement on the part of individual jobber-distributors to observe resale prices may thus be in evidence, the result in practical effect may well then be the same.

Operates Test Plant for Silica Sand

The Lantern Hill Silica Company, North Stonington, Connecticut, is operating a small test plant designed to separate impurities from a fine-grained silica sand. The deposit is peculiar in that the quartz grains are surrounded by films of extremely fine-grained muscovite mica carrying iron oxide.

The Bureau of Mines has worked out a process whereby the mica and iron may be removed by froth flotation and agglomeration, and an effort is now being made to commercialize the process.

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View of Multiclones used on rotary dryers at cement plant in Texas.

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HAULING ASBESTOS FROM PIT TO CRUSHER

THE United States, although by far the largest user of asbestos, produces only about 6 per cent. of the amount consumed. The chief source in this country is Vermont where, on Belvidere Mountain near Eden, is the only domestic mine producing chrysotile asbestos in quantity. This mine is operated by Vermont Asbestos Mines, division of the Ruberoid Company, manufacturer of asbestos and asphalt building products. C. T. Limerick is general superintendent. Articles describing this plant appeared in the December, 1936 and June, 1939 issues of PIT AND QUARRY.

In this open-pit asbestos mine the serpentine rock, which contains the asbestos fiber, is first drilled and blasted down from the 150-foot quarry face and then transported some 1,000 feet to a primary jaw crusher in two Euclid wagons which are drawn by International TD-18 Diesel tractors. Each wagon has a 7-cubic yard water-level capacity and 11 cubic yards heaped and hauls from 14 to 15 tons per load. Another TD-18 tractor equipped with a bulldozer is utilized to maintain the road leading from the quarry face to the primary crusher and to keep the quarry floor level and smooth.

Two International power units, one a new Model U-2, are used at times to operate certain units of crushing, drying and conveying machinery. The equipment is currently worked in three shifts, 24 hours a day, 6 days a week.

From the primary crusher the rock passes through a series of additional crushing and drying processes which reduce the material to about ½-inch size and remove the free moisture. Some of the asbestos fiber is loosened from the rock during the crushing process and is extracted by air suction. The remaining rock is passed through equipment which loosens the fiber still clinging to it. The rock and loosened fiber from these machines are passed over shaking screens, which sift out the fine sand and short fiber and bring the long loosened fiber to the surface where it is sucked up by air into collectors. The final process is that of grading the fiber according to length, the longest being the most valuable. In two silos, each 90 feet high, provision is made for storage of more than 10,000 tons of dry rock.

Thousands of tons of asbestos fiber is used annually by the Ruberoid Company alone in the production of asbestos-cement shingles and sidings for houses, asbestos-cement corrugated sheets for roofing and siding industrial buildings, wall-board, etc.

Shovel loading tractor-drawn wagon in open-pit mine.

Two of the loaded tractor-wagons en route to the primary crusher.

One of the side-dump wagons discharging into crusher chute.

Seek Agstone Sources in Willamette Valley

Farmers in the Willamette Valley of Oregon are handicapped by the high cost of the lime fertilizer that is necessary to neutralize acidity of the soil and to replace lime lost by drainage.

Realizing this need, the Oregon State Department of Geology and Mineral Industries examined the best-known limestone areas within the valley and concluded that there was little chance of producing high-carbonate stone in the valley at a price attractive to farmers. Representative samples from two of the largest deposits, the Dallas and Marquam, were forwarded to the U. S. Bureau of Mines for testing to determine the feasibility of producing an agricultural limestone by flotation methods.

Laboratory tests were favorable and indicated that a combination of soda ash, sodium silicate, and oleic acid in the proper proportions enabled flotation of the limestone in a product containing 85 per cent. or more of calcium carbonate with a metallurgical loss of only 15 per cent. Flotation of the Dallas and Marquam material appears promising and may warrant further investigation by the Bureau, provided the economic factors prove favorable.

Fire Causes Damage at Iowa Cement Plant

Fire caused damage estimated at $75,000 says President Hanford MacNider of the Northwestern States Portland Cement Company when it swept two storage structures at the company's plant at Mason City, Iowa, recently.

Damage was confined to the structures, only a small portion of the 70,000 barrels of cement in storage having been damaged.

Price Rise for Borax Temporarily Halted

Advances in price of $1 a ton on borax and $2 a ton on boric acid, asked last month by the American Potash & Chemical Company, major producer, for 1942 deliveries, have been suspended for 30 days in response to a request from Leon Henderson, Administrator of the Office of Price Administration.

The Red River Gravel Company has opened a sand-and-gravel plant near De-Queen, Arkansas with C. L. Null of San Antonio, Texas in charge. Its capacity is reported to be about 75 carloads daily.

Why continue to cut and bow wire rope, weakening the strands, making serious accident possible?

Use the Safety Clip. It can't be put on wrong — inexperienced workers can't cause the dangers of the U-Bolt put on backward. The Safety Clip takes a powerful, all-round Fist-Grip on rope. The four flat bearing surfaces far out-hold the finger-pinching U-Bolt Clip, and cannot crush and crimp wire rope.

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25% less steel is used in a Safety Clip assembly equal in strength to a U-Bolt-held rope. That steel can go to arsenals and plane factories for all-out military needs. Fewer clips are needed — that saves steel, too. And the rope-ends stay straight and round for re-use — no expensive waste from cut-off crimped-up rope ends.

THESE ARE YOUR SAFETY SAVINGS

No rope crimping or bowing	rope saved
No special wrench	tools saved
Bolts on opposite sides	tightening time saved
Can't go on wrong	accidents saved
Fewer clips needed	clips saved
Fewer rope breaks	accidents saved
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Bronze or Roller Bearing
JAW CRUSHERS

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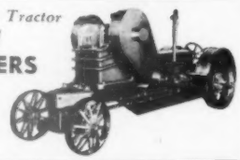
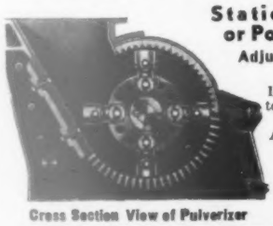


Ideal for maintenance road work

LIMESTONE PULVERIZERS



Cross Section View of Pulverizer

Stationary or Portable
Adjustable

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Four Shifts Answer to 7-Day Work Week

Inspectors of the Wage and Hour Division, U. S. Department of Labor, have been instructed to give all possible coöperation to employers seeking assistance on the best means of complying with President Roosevelt's call for the 7-day operation of defense industries.

Many employers have asked how they can best change over to a 7-day week, 24-hour day, under the Fair Labor Standards Act which requires the payment of time and one-half after 40 hours a week. Four-shift operation will solve the problem of the 168-hour workweek and get maximum production from our industrial machinery.

Schedule I

Shift	Sun	Mon	Tue	Wed	Thu	Fri	Sat
12 Mdnt— 8 AM	D	D	D	D	D	C	C
8 AM — 4 PM	C	B	B	B	B	B	X
4 PM —12 Mdnt	A	C	C	A	A	A	A

Several typical 168-hour schedules have been worked out with employers. These schedules may not be practical in many plants so the inspectors have been instructed to devote as much time as necessary to assist employers who want help in adapting some variation of the 168-hour week to their operations.

There is nothing inconsistent about the 40-hour shift and continuous operation, pointing out at the same time that the wage-hour law does not limit hours to 40 so that a longer shift, with overtime, can be used where desirable. Many continuous-operation industries have operated for years on a 4-shift basis and served as models for the organizations that went on 7-day, 24-hour-a-day operation in June 1940, when the President first asked for maximum defense production.

In a typical 40-hour-week, continuous-operation schedule three shifts work regular 8-hour shifts 5 days a week, accounting for 120 hours. The swing shift works the remaining 48 hours on a staggered basis. Some manufacturers work the swing shift 40 hours and use the remaining 8 hours for reconditioning machines.

Two typical 7-day-a-week schedules are shown in Schedules I and II.

The other schedules on this and the next page are designed both to rotate the four crews among the three 8-hour periods of the day and to give every man a Sunday off at regular intervals.

It is realized that these schedules will not fit all operations, but they are being issued to illustrate methods of laying out continuous-operation work charts. The principal thing about laying out a chart is to guard against a man "meeting himself coming to work at the end of a shift"; especially at the end of a cycle.

A 3-weeks cycle can be laid out when 8 hours a week are used for machine reconditioning. Without this break in operation, it is not possible to give each man a Sunday off during a cycle. This can be done in a cycle of four weeks. This is illustrated in Schedule IV.

These schedules were submitted to the Administrator by continuous-operation industries.

Schedule II

Shift	S	M	T	W	T	F	S	S	M	T	W	T	F	S	S	M	T	W	T	F	S
12— 8	B	C	C	C	D	C	C	C	A	A	A	D	A	A	A	B	B	B	D	B	B
8— 4	A	A	A	A	A	D	X	B	B	B	B	B	D	X	C	C	C	C	D	D	X
4—12	D	D	B	B	B	B	D	D	D	C	C	C	C	D	D	D	A	A	A	A	D

[Period X is used for reconditioning machines.]

Schedule III

Continuous jobs—1
Cycle—24 weeks

Part-time men—None
Full-time men—4

1st Week

	S	M	T	W	T	F	S
A	0	0	1	1	1	1	1
B	2	2	2	2	0	0	3
C	3	3	3	3	3	3	0
D	1	1	0	0	2	2	2

2nd Week

	S	M	T	W	T	F	S
A	1	0	0	2	2	2	2
B	3	3	3	3	3	0	0
C	0	1	1	1	1	1	1
D	2	2	2	0	0	3	3

3rd Week

	S	M	T	W	T	F	S
A	2	2	0	0	3	3	3
B	1	1	1	1	1	1	0
C	0	0	2	2	2	2	2
D	3	3	3	3	0	0	1

4th Week

	S	M	T	W	T	F	S
A	3	3	3	0	0	1	1
B	0	2	2	2	2	2	2
C	2	0	0	3	3	3	3
D	1	1	1	1	1	0	0

5th Week

	S	M	T	W	T	F	S
A	1	1	1	1	0	0	2
B	0	0	3	3	3	3	3
C	3	3	0	0	1	1	1
D	2	2	2	2	2	2	0

6th Week

	S	M	T	W	T	F	S
A	2	2	2	2	2	0	0
B	3	0	0	1	1	1	1
C	1	1	1	0	0	2	2
D	0	3	3	3	3	3	3

7th Week

	S	M	T	W	T	F	S
A	3	3	3	3	3	3	0
B	1	1	0	0	2	2	2
C	2	2	2	2	0	0	3
D	0	0	1	1	1	1	1

8th Week

	S	M	T	W	T	F	S
A	0	1	1	1	1	1	1
B	2	2	2	0	0	3	3
C	3	3	3	3	3	0	0
D	1	0	0	2	2	2	2

9th Week

	S	M	T	W	T	F	S
A	0	0	2	2	2	2	2
B	3	3	3	3	0	0	1
C	1	1	1	1	1	1	0
D	2	2	0	0	3	3	3

Numerals 1, 2 and 3 indicate which shift man works 7—3, 3—11, or 11—7.
Letters A, B, C, and D indicate the four men required to cover each shift job.
The pay period begins and ends at 7 a.m. or 8 a.m. on Sunday.
All men on each shift work on the same schedule and change shifts together. In the ninth week the men get the same days off as in the first week, but are on different shifts. The cycle repeats itself beginning with the 25th week.

Schedule IV

Sub-schedule A

Continuous jobs—1
Cycle—3 weeks
X—Reconditioning Period

Full-time men—4
Part-time men—None

Shift	Sun	Mon	Tue	Wed	Thu	Fri	Sat
12—8	X	D	A	A	A	A	A
8—4	B	B	D	D	B	B	B
4—12	C	C	C	C	D	C	D
12—8	A	D	D	A	A	A	A
8—4	B	B	B	D	B	B	D
4—12	X	C	C	C	D	C	C
12—8	A	D	A	A	A	A	D
8—4	X	B	D	B	B	B	B
4—12	C	C	C	D	D	C	C

At the end of a cycle the shifts rotate: Worker A takes the 4—12 shift, worker B takes the swing shift, worker C takes the 8—4 shift, worker D takes the 12—8 shift. At the start of the 13th week, the workers are working the same hours as in the first week.

Each worker, except the swing-shift worker, has one Saturday and one Sunday off during a cycle. The swing-shift worker is compensated in that he does not work on Sunday at all. Each Sunday one 8-hour period is used for reconditioning the machines, as designated by X.

40-hour week: Each shift works 40 hours a week. The remaining 8 hours are used for reconditioning machines, as designated by X.

42-hour week: Three shifts work 40 hours a week: a fourth shift works 48 hours, as designated by the alternate shift-letter in place of X. In a cycle, each shift has averaged 42 hours.

Sub-schedule B

Continuous jobs—1
Cycle—4 weeks
X—Reconditioning Period

Full-time men—4
Part-time men—None
Each man gets one Saturday and one Sunday off in a cycle

Shift	Sun	Mon	Tue	Wed	Thu	Fri	Sat
12—8	D	A	A	A	A	A	D
8—4	B	B	D	X(B)	B	B	B
4—12	C	C	C	D	D	C	C
12—8	A	A	D	D	A	A	A
8—4	D	B	B	B	B	B	D
4—12	C	C	C	X(C)	D	C	C
12—8	A	D	A	X(A)	A	A	A
8—4	B	B	B	B	D	D	B
4—12	C	C	D	C	C	C	D
12—8	A	A	A	X(D)	D	A	A
8—4	B	B	D	B	B	D	B
4—12	D	D	C	C	C	C	C

Schedule V

Continuous jobs—5
Cycle—4 weeks

Workweek—40 hours
Full-time men—21
Part-time men—None

	M	T	W	T	F	S	S	M	T	W	T	F	S	S	M	T	W	T	F	S	S	M	T	W	T	F	S	S	Job
Worker B	1	1	1	1	1	0	0	0	0	3	3	3	3	3	3	0	0	2	2	2	2	2	2	2	0	0	1	1	
Worker C	2	2	2	0	0	1	1	1	1	1	1	1	0	0	0	0	3	3	3	3	3	3	0	0	2	2	2	2	1
Worker D	3	0	0	2	2	2	2	2	2	2	2	0	1	1	1	1	1	1	1	0	0	0	0	3	3	3	3	3	
Worker A	0	0	3	3	3	3	3	3	0	0	2	2	2	2	2	2	2	0	0	1	1	1	1	1	1	1	0	0	
Relief man			3						3						3								3						
Worker B	1	1	1	1	1	0	0	0	3	0	3	3	3	3	3	0	0	2	2	2	2	2	2	2	0	0	1	1	
Worker C	2	2	2	0	0	1	1	1	1	1	1	1	0	0	0	3	0	3	3	3	3	3	0	0	2	2	2	2	2
Worker D	3	0	0	2	2	2	2	2	2	2	2	0	1	1	1	1	1	1	1	0	0	0	3	0	3	3	3	3	
Worker A	0	3	0	3	3	3	3	3	0	0	2	2	2	2	2	2	2	0	0	1	1	1	1	1	1	1	0	0	
Relief man			3						3						3								3						
Worker B	1	1	1	1	1	0	0	0	3	3	0	3	3	3	3	0	0	2	2	2	2	2	2	2	0	0	1	1	
Worker C	2	2	2	0	0	1	1	1	1	1	1	1	0	0	0	3	3	0	3	3	3	3	0	0	2	2	2	2	
Worker D	3	0	0	2	2	2	2	2	2	2	2	0	1	1	1	1	1	1	1	0	0	0	3	3	0	3	3	3	3
Worker A	0	3	3	0	3	3	3	3	0	0	2	2	2	2	2	2	2	0	0	1	1	1	1	1	1	1	0	0	
Relief man				3							3							3							3				
Worker B	1	1	1	1	1	0	0	0	3	3	3	0	3	3	3	0	0	2	2	2	2	2	2	2	0	0	1	1	
Worker C	2	2	2	0	0	1	1	1	1	1	1	1	0	0	0	3	3	3	0	3	3	3	0	0	2	2	2	2	
Worker D	3	0	0	2	2	2	2	2	2	2	2	0	1	1	1	1	1	1	1	0	0	0	3	3	3	0	3	3	4
Worker A	0	3	3	3	0	3	3	3	0	0	2	2	2	2	2	2	2	0	0	1	1	1	1	1	1	1	0	0	
Relief man					3							3							3							3			
Worker B	1	1	1	1	1	0	0	0	3	3	3	3	0	3	3	0	0	2	2	2	2	2	2	2	0	0	1	1	
Worker C	2	2	2	0	0	1	1	1	1	1	1	1	0	0	0	3	3	3	3	0	3	3	0	0	2	2	2	2	5
Worker D	3	0	0	2	2	2	2	2	2	2	2	0	1	1	1	1	1	1	1	0	0	0	3	3	3	3	0	3	
Worker A	0	3	3	3	3	0	3	3	0	0	2	2	2	3	2	2	2	0	0	1	1	1	1	1	1	1	0	0	
Relief man						3							3						3								3		
Working schedule for extra day off relief man on jobs 1 to 5*.	0	3	3	3	3	3	0	0	3	3	3	3	3	0	0	3	3	3	3	3	0	0	3	3	3	3	3	0	Relief man

*In this case shift 1 is the 12—8 shift; shift 2 is 8—4; shift 3 is 4—12; day off is 0.

Schedule VI

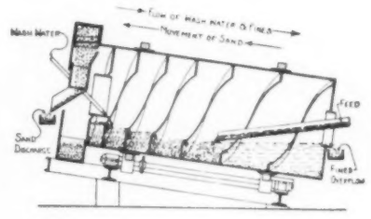
Continuous jobs—5
Cycle—21 weeks

Workweek—40 hours
Full-time men—21
Part-time men—None

Shift and Week	Day	Job 1	Job 2	Job 3	Job 4	Job 5	Shift and Week	Job 1	Job 2	Job 3	Job 4	Job 5
(Midnight) 1	Sun	X	B	C	Y	E	(Evening) 5	A	X	C	D	E
	Mon	X	B	C	D	Y		A	B	X	D	E
	Tue	A	X	C	D	Y		A	B	Y	D	E
	Wed	A	X	C	D	E		A	B	C	Y	E
	Thu	A	B	X	D	E		X	B	C	Y	E
	Fri	A	B	Y	D	E		X	B	C	D	Y
	Sat	A	B	C	Y	E		X	X	C	D	Y
(Evening) 2	Sun	A	B	C	Y	E	(Day) 6	A	X	C	D	Y
	Mon	X	B	C	Y	E		A	X	C	D	E
	Tue	X	B	C	D	Y		A	B	X	D	E
	Wed	A	X	C	D	Y		A	B	Y	D	E
	Thu	A	X	C	D	E		A	B	C	Y	E
	Fri	A	B	X	D	E		X	B	C	Y	E
	Sat	A	B	Y	D	E		X	B	C	D	Y
(Day) 3	Sun	A	B	Y	D	E	(Midnight) 7	X	B	C	D	Y
	Mon	A	B	C	Y	E		A	X	C	D	Y
	Tue	X	B	C	Y	E		A	X	C	D	E
	Wed	X	B	C	D	Y		A	B	X	D	E
	Thu	A	X	C	D	Y		A	B	Y	D	E
	Fri	A	X	C	D	E		A	B	C	Y	E
	Sat	A	B	X	D	E		X	B	C	Y	E
(Midnight) 4	Sun	A	B	X	D	E	(Evening) 8	X	B	C	Y	E
	Mon	A	B	Y	D	E		X	B	C	D	Y
	Tue	A	B	C	Y	E		A	X	C	D	Y
	Wed	X	B	C	Y	E		A	X	C	D	E
	Thu	X	B	C	D	Y		A	B	X	D	E
	Fri	A	X	C	D	Y		A	B	Y	D	E
	Sat	A	X	C	D	E		A	B	C	Y	E

*Each letter represents three men, one for each shift, 12—8 a.m., 8 a.m.—4 p.m., 4 p.m.—12.

WHAT IS THE HARDINGE COUNTER-CURRENT CLASSIFIER?



It is a slowly rotating drum on the inner surface of which is located a spiral flight attached to and revolving with the drum.

How It Works

The material to be classified is fed in at one end and as the Classifier rotates the coarse particles settle out and are moved to the sand discharge end. The fines with the wash-water overflow at the opposite end.

Advantages

Low maintenance—only one moving part in contact with the pulp.

Uses

Classifying and sizing.

Counter-Current washing.

Sand and gravel washing.

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SAN FRANCISCO, 501 Howard St.
TORONTO, 159 Bay Street

PERSONAL MENTION

WALTER F. TEWS of the Tews Lime & Cement Company, Milwaukee, has been elected first vice-president of the Milwaukee Builders Exchange.

SIDNEY F. MASHBIR, president of the Scientific Concrete Service Corporation, Washington, D. C., has been appointed chief air-raid warden at the nation's capital.

PAUL C. VAN ZANDT, vice-president of the Universal Atlas Cement Company, New York, was the chief speaker at the annual dinner of the Independence, Kansas, Chamber of Commerce held in December.

BERT M. BROCK has been appointed manager of industrial relations for the John A. Roebling's Sons Company. For the past year he had been director of industrial relations, Pittsburgh district, Carnegie Illinois Steel Corporation, and prior to that was assistant director of industrial relations for the U. S. Steel Corporation of Delaware.

R. CALVERT HAWS, for the past year an account executive with the McCarty Company, Los Angeles, has joined Western Precipitation Corporation to assist RICHARD F. O'MARA, sales manager, in advertising and sales promotion. Mr. Haws was formerly with Henri Hurst and McDonald, and head of his own agency in Chicago.

T. B. STURGES has been re-elected president of the Pennsylvania Drilling Company, nationally known mineral exploration and foundation testing organization, for the coming year. F. C. STURGES was elected vice-president and general manager and JOHN H. MELVIN, treasurer.

MAX W. BABB, president of the Allis-Chalmers Manufacturing Company, has been elected chairman of the board of directors. W. C. BUCHANAN, a director and member of the executive committee, was elected to succeed him as president.

JAMES S. ANDERSON is now connected with the New York District Sales Office of the Babcock & Wilcox Tube Company. He comes to the Babcock & Wilcox company from Steel and Tubes Division of the Republic Steel Corporation.

R. W. MARTIN, secretary-treasurer of the Forrer Stone & Supply Company, Madison, Wisconsin, has been elected secretary of the Westside Businessmen's Association in that city.

J. G. C. AKERS of Chadron, Nebraska, has applied for a mineral lease on a section of land in Dawes County, Nebraska, where he plans to start a bentonite plant. The Dawes County site is not far from rich seams of bentonite clay which is being worked in eastern Wyoming.

LEWIS A. BASSETT, 83, president of the Hendrick Manufacturing Company, Carbondale, Pennsylvania, died at his home in Carbondale on January 2. He joined the company 63 years ago.

CAPTAIN LOGAN A. NOLL, 79, pioneer gravel operator on the Ohio River passed away recently at the home of his daughter in Tulsa, Oklahoma. He founded the Ohio River Sand & Gravel Company in 1904 and developed a number of dredging and screening devices. Until his retirement in 1935 he operated the Kennedy Sand Company of Marietta, Ohio.

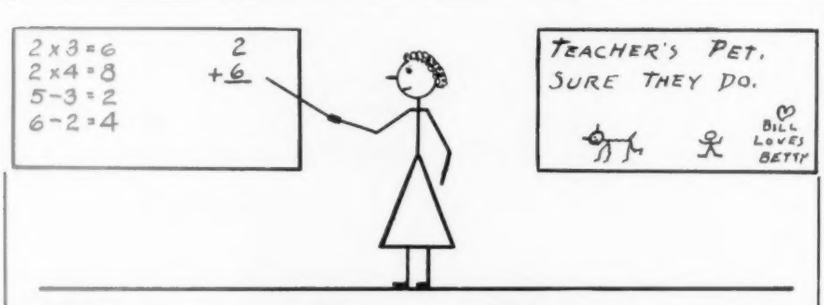
JOSEPH J. STAFFORD, 61, one of the founders of the Ideal Cement Company but not connected with the cement industry for many years, died recently of a heart attack at his home in Cleveland.

WILLIAM GUY WOLFORD, 46, owner and manager of the Ready-Mix Concrete Company of Lafayette, Indiana, is dead.

LOUIS F. PRETTYMAN, 69, aggregates operator at North Platte, Nebraska, for many years, died recently of a heart attack.

FRED DAVENPORT, 61, an official of the J. C. O'Connor & Sons Construction Company of Ft. Wayne, Indiana, died January 8 while in the offices of the company. He had been for some time manager of the concern's sand-and-gravel plant at Peru, Indiana. He is survived by one daughter, three brothers and two sisters.

DONAL O'CONNOR, 55, manager of the New York office of the Ohio Hydrate & Supply Company, died January 9. He was formerly general sales manager of the Rockland & Rockport Lime Company, Rockport, Maine, and was widely known as one of the world's leading authorities on the Gaelic language. He was a native of County Kerry, Ireland.



WHAT'S YOUR PROBLEM?

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WET — STICKY — DRY

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OCCUPATIONAL DISEASES and the LAW

Dust Diseases

Scherini v. Titanium Alloy Co., decided by the New York Court of Appeals, October 23, 1941; reported at 286 N.Y. 531, 37 N.E. (2d) 237.

This suit was against an employer by a workman who alleged that while working in the employer's plant the workman "sustained injuries to his health and aggravation thereof," that these injuries were not accidental in character, and that they were caused by the employer's negligence and by his violation of various statutes in failing to keep the plant free of smoke, noxious gases and other impurities. The complaint further alleged that Section 3, subdivision 2, of the Workmen's Compensation Law, as amended by Chapter 254 of the Laws of 1935, and Article 4-A of that act, as added by Chapter 887 of the Laws of 1936, or "either or both" of those enactments, were unconstitutional and void, as leaving without any remedy workmen who suffer injuries from impure air conditions through an employer's fault, unless permanent and total disability results therefrom.

The trial court and the Appellate Division granted the defendant employer's motion for a dismissal of the complaint on the ground that the court has not jurisdiction since the alleged cause of action comes exclusively within the coverage of the Workman's Compensation Law. That judgment is affirmed by the Court of Appeals in this decision.

In the absence of an allegation that the workman has been disabled, partially or totally, the court says that it can not pass on the validity of provisions of Article 4-A of the Workmen's Compensation Law that there shall be no compensation for partial disability due to dust diseases (Section 66), and that the liability of an employer prescribed by that article shall be exclusive and in place of any other liability whatever (Section 72).

Furthermore, says the court, even if the papers had sufficiently alleged that the workman had been partly disabled by a dust disease through the employer's fault, the court would not be in a position to pass on the contention that Sections 66 and 72 of the Workmen's Compensation Law are unconstitutional in so far as they provide that an employee shall have no remedy or recovery against his employer for a partial disability resulting from dust diseases. "Whether this contention be correct or not, plaintiff can not bring an action at law to recover for such a disability. Even if Sections 66 and 72 were held to be invalid, plaintiff's sole remedy would still be in proceedings under the Workmen's Compensation Law and his rights to compensation would be governed by the provisions of that statute, as it stood before Sections 66 and 72 were enacted, as to compensation for disability from occupational diseases."

Employee's Records

Archer v. Cornillaud, decided by the U. S. District Court, Western District of Kentucky, Paducah Division, October 31, 1941; reported at 41 Fed. Supp. 435.

The plaintiff sued on behalf of himself and on behalf of "all other employees of the defendant similarly situated" to recover unpaid wages which he alleges to be due under the Fair Labor Standards Act of 1938. The court rules in this decision that the action will proceed on behalf of only those who show that they are similarly situ-

SCREENING FACTS
Not Just Claims

Producers of aggregate materials, whether operating one small plant or fifteen large ones, all agree that their screening equipment is the heart of their plant and to produce profits, must function efficiently. Simplicity Gyrating Screens do fulfill this requirement. The best proof of this fact is that over 1300 operating plants, each having from one to forty-six Simplicity machines, are on our list of known users.

One large producer, operating 15 plants in five different states, purchased their first Simplicity screens in 1929, and up to December 1st, 1941, had purchased a total of 104 Simplicity Gyrating Screens. Twenty-two of these units were purchased during 1941, with the bulk of them going into two of their newest and largest plants. Their purchases have ranged from 2′x3′ singles to 5′x12′ triples. During twelve years of operating Simplicity screens under all conditions, their records show a remarkably low average yearly maintenance cost per machine.

For Screening Facts, ask your Simplicity Representative or write for Descriptive Bulletin No. 41.

SIMPLICITY ENGINEERING COMPANY

Durand, Michigan

ated and indicate by the record in this case their approval of this action on their behalf (the court's views on the right of an employee to prosecute this kind of suit on behalf of other employees are set out more fully in an earlier decision, *Shain v. Armour & Co.,* 40 Fed. Supp. 488).

In response to the defendant's claim of exemption from the Fair Labor Standards Act the plaintiff filed a motion asking that the defendant produce, and permit the plaintiff to inspect, copy and photograph, "all records, papers, books, accounts, contracts and letters and other objects and tangible things which pertain to the nature and extent of the defendant's business and which more particularly pertain to the nature and extent of the defendant's wholesale and retail transactions and his interstate and intrastate transactions, and the names and addresses of the persons, firms, and corporations with which said transactions were had." This motion was denied on the ground that it goes far beyond the scope and purpose of the Federal court rule permitting inspection of the defendant's records. "It is well settled by numerous decisions that the rule was never intended to permit a party to engage in a 'fishing expedition' among the books and records of the adverse party. Not only must the plaintiff designate specifically the particular books and records that contain the information which he desires, but he must state facts showing that the information contained therein is material to the issue."

Silicosis

State ex rel. Lourin v. Industrial Commission, decided by the Supreme Court of Ohio, November 12, 1941; reported at 37 N.E. (2d) 595 (affirming a decision of the Ohio Court of Appeals, Franklin County, 67 Ohio App. 300, 35 N.E. (2d) 841).

In this action the widow of a workman who died of silicosis sought to compel the Ohio Industrial Commission to award her compensation in accordance with the general schedule of compensation for all other occupational diseases and for accidental injuries provided in Section 1465-82 of the Ohio General Code, rather than in accordance with the latter part of Section 1465-68a, setting forth special provisions relating to compensation for silicosis. At the time of the husband's death the special provision complained of (since repealed, 118 Ohio Laws, 422) provided that if an employee had been subject to injurious exposure to silica dust in his employment in Ohio for at least five years after the effective date of the act, compensation would be paid in accordance with Sections 1465-79, 1465-81 and 1465-82 of the General Code, but that if such exposure amounted to less than five years, the maximum amount payable should not exceed $500 plus $50 for each calendar month which had elapsed after the effective date, but not in any case more than $3,000. These provisions were claimed to be arbitrary, unreasonable and in violation of the Ohio and United States constitutions.

The court holds, however, that the fact that the General Assembly did not see fit to provide a special schedule for any of the 21 other diseases referred to in Section 1465-68a did not of itself establish that such a special schedule for silicosis was arbitrary. "Even if this special schedule denies to the silicosis claimant certain rights belonging to claimants for other diseases, and provides a maximum award for death from silicosis lower than that available under Section 1465-82, General Code, for death or injuries and from other occupational diseases, it can not be concluded that such differentiations are unreasonable or arbitrary. These differentiations are clearly matters of policy for the legislature to determine.

It was also claimed that it was arbitrary and unreasonable to classify silicosis claimants among themselves according to the number of months of exposure to silica dust between July 31, 1937, the effective date of the act, and the commencement of disability. To this the court replies that in the interest of administrative workability, or to effect gradations in legislative policy, certain definite markers must be established, even though it may be admitted that an apparent hardship results to those whose rights lie just outside. "It is, of course, for the legislature to determine just where such boundaries shall be set." Whether the basis for computing the award was wise is not for the court to decide. After the death of the worker involved in this case the General Assembly changed its determination of policy by repealing the provision complained of. "But a law's unwisdom which may occasion its repeal does not establish its unconstitutionality."

The section complained of is held not to violate either the Fourteenth Amendment to the United States Constitution or Section 26, Article II of the Ohio constitution, and a judgment dismissing the petition is affirmed.

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Election

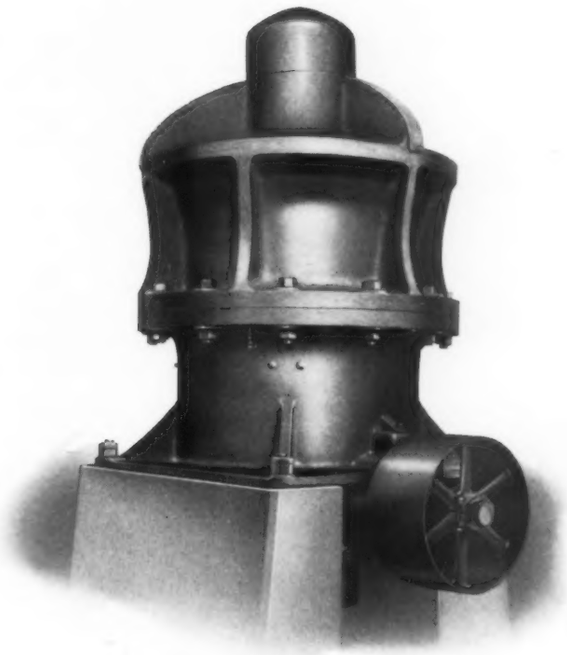
Klein v. Herrick, Regional Director of National Labor Relations Board, decided by the U. S. District Court, Southern District of New York, September 17, 1941; reported at 41 Fed. Supp. 417.

During the existence of a contract between an employer and a union representing the employees, a rival union petitioned for an investigation and for certification of a collective-bargaining agent for the employees pursuant to the National Labor Relations Act. The National Labor Relations Board, after a hearing, directed that an election be held to determine the employees' choice of a union, or of no union. In this suit the union holding the contract with the employer sought to enjoin the holding of the election, claiming that its rights would be violated if the election were held. The court decided, however, that the board had jurisdiction of the matter and that it was within its rights in ordering the election to be held, both because the complaint failed to show that any harm or injury had befallen or was about to befall the plaintiff union as a result of the ordering of the election, and because if the plaintiff union's contentions were right no election could be held until at or after the expiration of the contract. "No such limitation on the board's power is found in Section 9 (c)," says the court. "Nor does logic suggest such a limitation by implication. It is sound practice to negotiate a new labor contract before the expiration of the old so as to avoid an interregnum of unorganized labor relations, so prolific of strikes. If plaintiff's position is sound, either such a salutary practice could not be followed or the employees must be deprived of the right to a free choice of representatives to bargain in their behalf."

Coercion

National Labor Relations Board v. Luxuray, Inc., decided by the U. S. Circuit Court of Appeals, Second Circuit, November 3, 1941; reported at 123 Fed. (2d) 106.

This decision orders enforcement of an order of the National Labor Relations Board requiring the employer concerned to desist from unfair labor practices, consisting of threats and anti-union statements calculated to persuade its employees not to join or assist a certain union, and to interfere with, restrain and coerce them in their right to self-organization and to bargain collectively through representatives of their own choosing. It was contended that the employer acted lawfully in warning the employees against unions because of the right to freedom of speech guaranteed by the constitution. "But free-



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dom of speech," says the court, "does not extend to interested appeals by an employer to induce his men not to exercise the right of collective bargaining and not to become members of a labor union" (citing cases). When the employer "said to his employees: 'My advice is to work in harmony with the company and leave it to our judgment as to when it is practical to increase your scale of wages and when it is not,' . . . his action went beyond mere friendly advice. In view of his power to discharge the employees they might fairly suppose not only that it was not to their interest to become members of the union but that they might suffer from such an association."

The court's decree also orders enforcement of a further portion of the board's order requiring the employer to reinstate with back pay an employee found to have been discriminatorily discharged because of union activities.

Commission Agent

Whatley v. Great Southern Trucking Co., decided by the U. S. Circuit Court of Appeals, November 6, 1941; reported at 123 Fed. (2d) 143.

This was an action to recover unpaid wages, overtime and other benefits under the Fair Labor Standards Act of 1938. The defendant is a trucking company which had a contract with a "commission agent," by whom the worker bringing the suit was employed, whereby the commission agent operated a warehouse at which long-haul shipments could be deposited, and shipments from that point could be picked up. The company continuously regarded the agent as a commission agent, and not as a general agent or a regular employee. It attempted no regulation of his hours of work, the number of his employees, or the compensation paid to them. It never authorized the agent to employ anyone, did not know that the plaintiff was working for him until this suit was filed, never paid the plaintiff any of the wages he received, and never represented to anyone that the agent was vested with authority to hire in its behalf. The agent knew that his authority was so limited, and he did nothing to convey a different understanding to those with whom he dealt. He hired the plaintiff to work for him, and paid him with his personal funds. Under these circumstances the District Court held that the plaintiff was not an employee of the trucking company and not entitled to the recovery sought under the Fair Labor Standards Act, and that judgment is affirmed in this appeal.

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LABOR DECISIONS

Competitive Wages

National Ass'n of Wool Manufacturers et al. v. Fleming, Wage and Hour Administrator, decided by the U. S. Court of Appeals for the District of Columbia, June 30, 1941; reported at 122 Fed. (2d) 617.

This decision holds that the Administrator's definition of an industry is an inextricable part of a wage order under the Fair Labor Standards Act of 1938 and is judicially reviewable; that in adopting a wage order the Administrator may consider competitive conditions between industries, and under the facts of this case was under a duty to consider the competitive condition between cotton and wool manufacturers; and that the evidence supports the definition in controversy.

Wage orders were also in controversy in *Southern Garment Manufacturers Ass'n, Inc., et al. v. Fleming,* decided by the same court on the same day (122 Fed. (2d) 622), in which the right of the Administrator to have subordinates conduct hearings and sift the evidence taken, his right to approve part and reject part of an industry committee's report, and the particular classifications involved are upheld, and in *Andree & Seedman, Inc., et al. v. Administrator, etc.,* also decided in the same court on the same day, (122 Fed. (2d) 634), holding that the order complained of complied with the requirements of Section 8(b) of the act.

Change in Union Chosen

Triboro Coach Corp. et al. v. New York State Labor Relations Board at el., decided by the New York Court of Appeals, July 29, 1941; reported at 286 N. Y. 314.

A contract between the employer involved in this case and a union representing the employees had a term of three years, with provision for automatic renewal unless written notice were given by either party 90 days before the termination of the contract. The facts were disputed, but according to the court findings, no effective notice of termination was given, and the contract was automatically renewed on October 20, 1939. A new contract between the employer and the same union was made on November 14, 1939, and the court holds that since the first contract was automatically renewed, the union was the authorized representative of the employees, and the second contract is consequently a valid and binding contract.

Meanwhile, upon the application of another union claiming to represent the employees, the State Labor Relations Board directed that an election be held to determine the employees' representative for collective bargaining. Such an election was held on November 24, 1939, and the competing union won the votes of a majority of the employees. Thereupon the Labor Relations Board certified that union as the exclusive bargaining representative and (after appropriate hearings) ordered the employer to abrogate the contract of November 14, 1939, with the original union and to negotiate with the certified union. That order, however, was set aside in the court actions culminating in the decision of the Court of Appeals reported here.

The decision of the labor board, says the court, "puts a premium upon industrial unrest. The question presented for decision is whether employees, who have selected a labor union as their representative by joining and retaining membership therein, and who have allowed such selected representatives to make an agreement which is binding upon the employer, are in spite of this contract still entitled to a certificate from the labor board to the effect that they have selected another union as their bargaining agent in order to void the contract which they have previously made. In short, the question is whether employees who have made a valid contract with their employer may, while the contract is in force choose another representative to repudiate the contract which is already in force. . . . When such an agreement has been obtained, and a stable relationship established thereby, the very purpose of the act may be defeated if the machinery of the board be employed to upset such contractual relationship."

The decision does not, says the court, deprive any union of the right to organize the employees, nor prevent the board from certifying a new union as the bargaining agent for negotiating further contracts when the existing contract expires.

Views About Unionism

National Labor Relations Board v. Federbush Co., Inc., decided by the U. S. Circuit Court of Appeals, Second Circuit, July 18, 1941; reported at 121 Fed. (2d) 954.

An employer against whom the National Labor Relations Board issued

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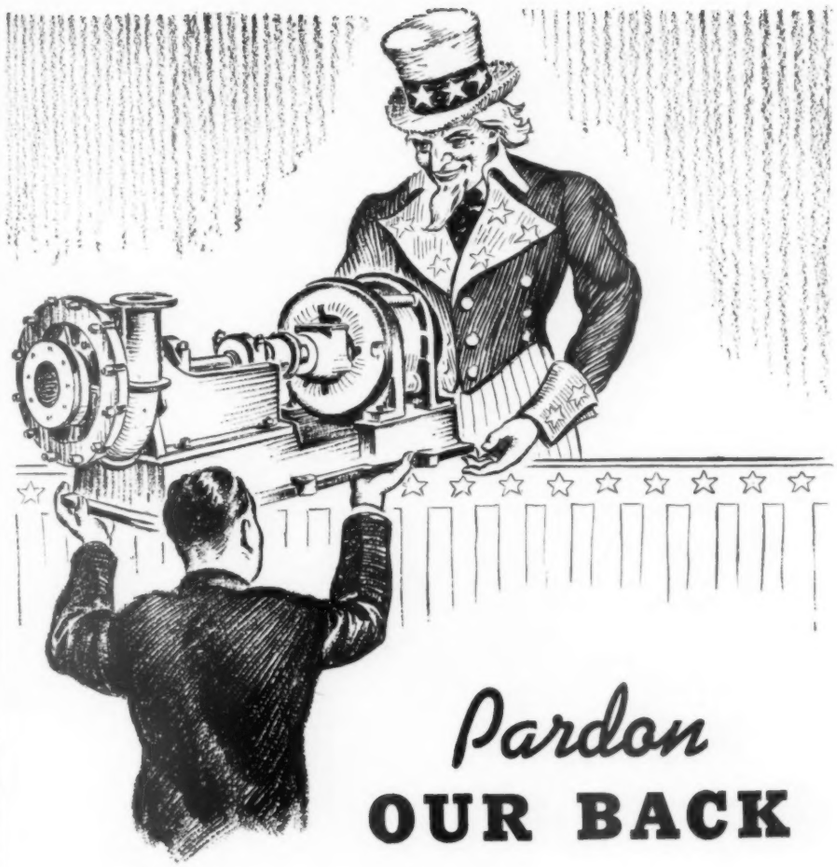

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CENTRIFUGAL PUMPS

a cease-and-desist order contended in this appeal that the order invaded the employer's privilege of "free speech" by making it a wrong under Section 8(1) of the National Labor Relations Act to present to an employee the company's views about unions and unionism. The court holds, however, that the order was within the board's powers. "No doubt an employer is as free as anyone else in general to broadcast any arguments he chooses against trades-unions," says the court, "but it does not follow that he may do so to all audiences. The privilege of 'free speech,' like other privileges is not absolute. . . . Arguments by an employer directed to his employees . . . are legitimate enough as such, and *pro tanto* the privilege of 'free speech' protects them; but, so far as they also disclose his wishes, as they generally do, they have a force independent of persuasion. The board is vested with power to measure these two factors against each other, a power which does not trench upon the First Amendment. . . . What to an outsider will be no more than the vigorous presentation of a conviction, to an employee may be the manifestation of a determination which it is not safe to thwart. The board must decide how far the second aspect obliterates the first."

Union Agents' Passes

National Labor Relations Board v. Cities Service Oil Co., et al. (National Maritime Union of America, Intervener), decided by the U. S. Circuit Court of Appeals, July 25, 1941; reported at 122 Fed. (2d) 149.

The court in this decision affirms an order requiring several oil companies to grant passes to representatives of a union which was certified as the exclusive bargaining agent of the unlicensed personnel on the companies' vessels, in order that such representatives may go aboard the companies' vessels and meet with the unlicensed personnel. Such passes had been sought for the purpose of going on board the tankers to investiagte and negotiate concerning grievances of the seamen, and the court finds the order to be within the discretion of the board. The court adds a clause, however, to specify that the companies may forbid the use of such passes to use access to the vessels either to solicit membership in the union or to collect dues.

Interstate Commerce

Muldowney v. Seaberg Elevator Co., Inc., decided by the U. S. District Court, Eastern District of New York, June 4, 1941; reported at 39 Fed. Supp. 275.

In this decision it is held that a company manufacturing, servicing and repairing elevators was engaged in interstate commerce for purposes of the Fair Labor Standards Act on account of elevator repair service and parts sold outside the state, even though the volume of such activities was small in proportion to its total business, and that an employee servicing as a watchman and as a handy man was, under the particular facts, an employee engaged in interstate commerce for purposes of the act. The cleaning of the shops was "work necessary to the carrying on of manufacturing," and the painting of parts, the cleaning of motors which came in for repairs, assisting in loading and unloading trucks and other tasks were "work in interstate commerce."

In computing the hourly rate of pay the court follows the method outlined in Interpretative Bulletin No. 4 of the Wage and Hour Administrator, dividing the weekly pay by the number of hours worked during the week. The employee was required to sleep at the plant; in computing the hours of overtime, the court follows Interpretative Bulletin No. 13, deducting from the total hours spent at the plant the time spent in sleeping and for meals, relaxation and entirely private purposes.

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TRAFFIC News Digest

I.C.C. Reports

Lime—Docket No. 28669, United States Lime Products Corporation *v.* Atchison, Topeka & Santa Fe *et al.* By Examiner Harold M. Brown. Carload rates on lime and lime products, shipped since May 7, 1939, from Sloan, Nevada, to certain destinations in California, such as San Francisco, San Diego, and Fresno, not unreasonable or unduly discriminatory but unduly prejudicial, now and for the future, to the extent that they exceed or might exceed those concurrently applicable from Nelson, Arizona, to the same California destinations. Undue prejudice proposed to be ordered to be removed. It was alleged by the complainant that the rates were and are unreasonable, unjustly discriminatory, and unduly preferential of its competitors at Nelson. The examiner stated the evidence was insufficient to support an award for reparation under a finding of undue prejudice.

Cement—Fourth-section application No. 18688, cement, lime, and mortar from official territory. By division 2. Authority granted by F.S.O. 14457, on conditions, to establish and maintain a mixing rule on lime, cement, and dry building mortar, in mixed carloads, from Engle, Martinsburg, and Millville, West Virginia, and Grove, Security, and Hagerstown, Maryland, to destinations in southern territory, the same as that applicable on the same commodities, in mixed carloads, from competing origins to the same destinations, without observing the long-and-short-haul part of the fourth section. It was found by the commission that relief was justified based on carrier and market competition.

Motor Reports

Hartsville, Tennessee.—MC 102429. Etheridge T. Gregory, dba E. T. Gregory, contract-carrier application. Joint board 238. Permit proposed. Marble and granite from Elberton, Georgia, to Nashville, Tennessee, over specified route, with service from Tate, Georgia, as intermediate point for pick up only and with no transportation for compensation in the reverse direction.

Hutsonville, Illinois.—MC 102604. Charles L. Osborn, common-carrier application. Joint board 21. Certificate proposed. Coal, from Clay and Sullivan Counties, Indiana, to points in Crawford County, Illinois, and sand

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They're won on the production lines, in the mills, the mines, the wheat fields. The defeated Central Powers found this out in World War I.

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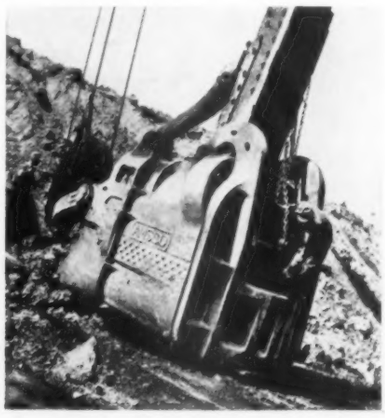

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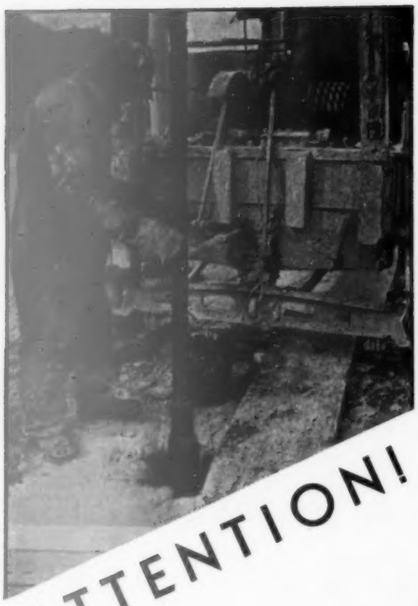

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and gravel, from Sullivan County to Crawford County.

Kresgeville, Pennsylvania. — MC 101553. Kenneth Livengood, common-carrier application. Joint board 67. Denial for want of prosecution proposed. Coal, lime and fertilizer, between points in New Jersey and Pennsylvania.

Port Jervis, New York.—MC 101876. Lillie A. Skellinger and William Beardsley, dba S. & B. Coal Yard, contract-carrier application. Examiner R. I. Burns. Denial for want of prosecution proposed. Lime and limestone products between McAfee, New Jersey, and points in Sullivan county, New Jersey.

Ettrick, Wisconsin.—MC 69230, Sub. 1. Henry J. Solberg, common-carrier application. Joint board 142. Certificate proposed. Brick, building blocks, and sand. From Winona, Minnesota, to Arcadia, Black River Falls, Blair, Trempealeau, and Galesville, Wisconsin.

Central Freight Association

Docket 69258 (Carrier's proposal)—Industrial sand, as per usual descriptions. Establish on, from so-called Vassar Group, *viz.*: Vassar, Wampson. Watrousville, McHale, and Juniata, Michigan to Hasbrouck Heights, New Jersey, a rate of $3.96 per net ton in open and closed cars.

Docket 69282 (Shipper's proposal)—Crushed stone, in bulk, in open-top cars only; crushed-stone screenings, in bulk, in open-top cars only; tailings, in bulk, in open-top cars only, carloads. Establish a rate of 72 cents per net ton from Bluffton, Indiana, to Sidney, Indiana.

Docket 69290 (Shipper's proposal)—Stone, riprap, rubble and spawls, carloads. Establish a rate of 66 cents per net ton from Holland to Malinta, Ohio via the N.Y.C. (W) Delta, O. D.T.& I.R.R. To expire April 30, 1942.

Docket 69332 (Shipper's proposal)—Firestone, rough-quarried, carload, minimum weight 50,000 pounds. Establish a rate of $1.80 per net ton from New Castle to Erie, Pennsylvania, and a rate of $2.08 to Suspension Bridge, New York.

Trunk-Line Association

Docket 40462 (Shipper's proposal)—Limestone, broken, crushed, ground or pulverized, carload. Minimum weight 60,000 pounds. Establish a rate of $2.92 per net ton from Pleasantville, New York to Potomac Yard, Virginia, in lieu of current sixth-class rate. Reason: Comparable with rates to other points.

Docket 40466 Sup. 1. (Shipper's pro-

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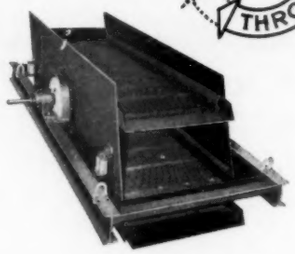

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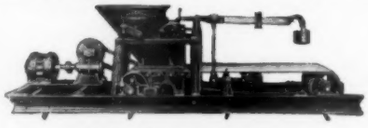

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posal)—(A) Plaster and related articles, carloads, and (B) plasterboard, carloads, from Garbutt and Wheatland, New York to Fore River, Massachusetts, (A) 25 cents and (B) 28 cents per 100 pounds.

Docket 40511 (Shipper's proposal)—(A) plaster and related articles as specified in Note 50 of Reading Co. Tariff I. C. C. 2166, carloads, and (B) plasterboard, carloads, minimum weight 40,000 pounds, from Gray's Ferry and Gibson's Point, Pennsylvania, to Manassas, Virginia, (A) 15 cents and (B) 17 cents per 100 pounds. Reason: Comparable with rates to other points in the immediate vicinity.

Docket 40503 (Shipper's proposal)—Gypsum rock, crude or run-of-mine, carload. Minimum weight 90 per cent. of marked capacity of car but not less than 80,000 pounds. Establish a rate of $3.63 per net ton from Plasterco and Saltville, Virginia, to Copley, Ohio, in lieu of current sixth-class rate of $7.00 per net ton. Reason: Comparable with rates to other points in the immediate vicinity.

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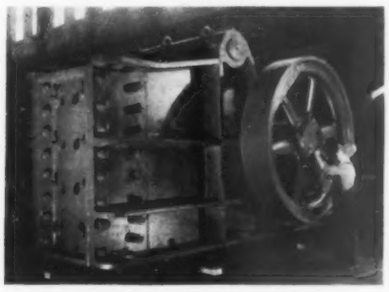
The West Allis works of the Allis-Chalmers Manufacturing Company, Milwaukee, has introduced an all-steel ore and rock crusher of an entirely new design. The jaw crusher already completed and illustrated here is the first of several of this type on order.

The new design contributes materially to economy of operation and an increase in



The 48- by 42-inch jaw-crusher.

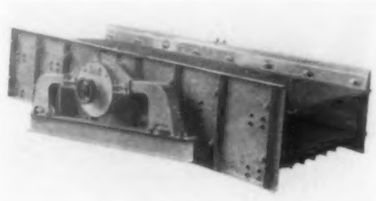
capacity, according to the manufacturer. The machines are built with rolled-steel, welded side frames to obtain greater strength and less weight. The new development will replace the older type of crusher made with cast-iron frames and reinforced by steel tension bolts.

Weighing approximately 130,000 pounds, the crusher has a receiving opening 48 by 42 inches.

• Vibrating Screen

The Style "M" Robins-Vibrex, a new, high-speed, unbalanced pulley type vibrating screen that is said to stand up to overloads is announced by Robins Conveying Belt Company, Passaic, New Jersey, in a new Bulletin No. 118, just released for free distribution.

The new screen has a number of features designed to save power, lubricant, screen cloth



Screen designed to withstand overloads.

and general maintenance costs. Oil-lubricated bearings are super-sealed by means of double action flingers and completely welded splash and dust guards.

Inclination of screen, amplitude of vibration and operating speed may all be varied on the new Robins-Vibrex in order to obtain maximum flexibility of application. A complete range of sizes is offered.

• Cable Scoop

The Heil Company, Milwaukee, has just placed on the market a new Hi-Speed cable scoop that combines the efficiency of the Heil twin-cable scoop with the speed, economy and flexibility of the rubber-tired Diesel-powered Heil Hi-Speed tractor.

Push-loaded with a crawler tractor, this unit digs a heaped 15-cubic yard load in 40 to 50 seconds and speeds away at travel speeds of 6 to 20 miles per hour, depending on road and grade conditions.

The faster operation and greater efficiency of the combination enable the operator to show faster running time on hauls where slower crawler-scraper operations would not be practical.

The tractor unit, which furnishes the power for the scoop is a four-wheel unit equipped with a 150-horsepower Cummins Diesel engine as standard, although a gasoline engine or other Diesel engines are available.

The unit has hydraulic power steering and has oversize brakes on the tractor drive wheel and scoop-trailer wheels operated by a foot pedal. Individual hand control brakes on the tractor drive wheels give a short turning radius that is ideal for easy operation.

The new scoop in action.

A 21-inch American Blower fluid-coupling drive insures smooth operation and reduces gear shifting time to a minimum.

LOWEST COST PER YARD

writes the specification of a HAISS LOADER for the man who plans for the future as well as the present.

•

2-3-5 and 8 YARD CAPACITIES. Write for catalogs

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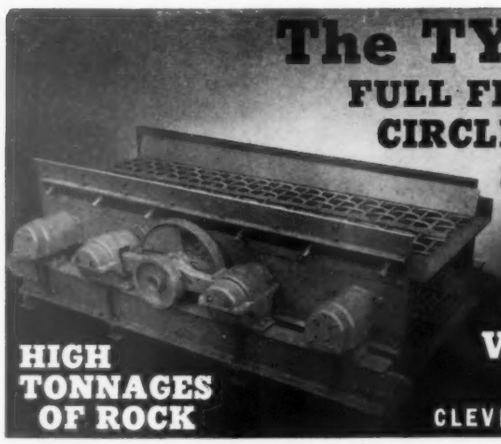
The TY-ROCK FULL FLOATING CIRCLE THROW SCREEN

Coarse and Medium Sizes
Live Rubber Mountings
No Escaping Vibration



HIGH TONNAGES OF ROCK

The W. S. Tyler Company

CLEVELAND, OHIO, U. S. A.

• Lime Product

Known by the name "Excelite", a new construction material has been announced by Charles H. Oppenheimer, president of Designers for Industry, Inc. Quicklime, together with excelsior, silicate of soda, and soybean protein, is used in the manufacture of this product.

Claims for this product are that it is relatively high in strength, low in heat conductivity, tough, and resilient and can be handled with little danger of breakage. Moreover, according to its promoters, it can be sawed, planed, or nailed, yet will not swell, warp, bulge, or check.

Uses advocated for "Excelite" are as a molded product in place of metals or plasters, in place of other insulating boards, and as a body material for truck and bus bodies.

And, what's more, claim the developers, this new, inexpensive material has a low manufacturing cost and is not subject to priorities or shortages.

• Portable Welder

A new two-wheeled, lightweight pneumatic-tired trailer for mounting 200-, 300-, or 400-ampere electric-drive welders is now in regular production at Hobart Brothers Company, manufacturers of arc-welding equipment, Troy, Ohio.

Designed for road towing up to 35 miles per hour, this unit will prove very useful for hurry-up trips to different locations for emergency production, maintenance, and repair work. The trailer is so designed that mounting it is accomplished easily by means of three bolts in frame of trailer which register with three holes in the legs of the welding machine. A combinatoin tow bar and standing support has a hand-operated ratchet for locking the support arm in position. The unit is easily moved by hand by virtue of its low, underslung construction; narrow tread; and precision method of balancing. It is capable of trailing over very rough terrain.

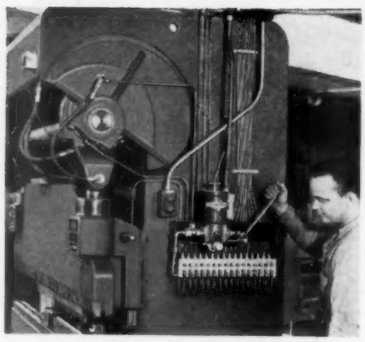
Two-wheel welder-trailer.

• Adds Crusher

Diamond Iron Works, Inc., Minneapolis, Minnesota, has added a new item to its line of roll crushers, a 54- by 24-inch model.

• Moves Offices

Sauerman Brothers, Inc., Chicago, announces the removal of its general offices from 438 South Clinton Street, to 522 South Clinton Street.



The Lincoln Engineering Company, St. Louis, has incorporated many new features in its latest contralized lubricating system. The Lincoln Centro-Matic system, used on industrial machinery, is an easily installed system for lubricating all bearings. The system consist of a number of injectors—one for each bearing to be lubricated, each connected to the bearing by tubing or flexible high-pressure hose as required, and each individually adjusted to discharge the required amount of lubricant. The injectors can be mounted singly or in manifold and are supplied from a central pumping unit.

Trade Literature

PORTER AGITATORS, BLENDERS, MIXERS, KETTLES, BALL MILLS, PEBBLE MILLS. (Catalog 101.) H. K. Porter Company, Pittsburgh.

MCNALLY-CARPENTER CENTRIFUGAL DRYER, 4 pages. (Bulletin 741). McNally Pittsburgh Manufacturing Corporation, Chicago.

CATALOG OF RECONDITIONED AND NEW EQUIPMENT, 16 pages. (Catalog G-4200). Denver Equipment Company, Denver.

AJAX LO-VEYOR FOR BULK MATERIALS, 8 pages. (Bulletin 31). Ajax Flexible Coupling Company, Westfield, New York.

OSGOOD MOBILCRANES, 12 pages. (Bulletin 4128). OSGOOD TYPE 70 EXCAVATORS, 12 pages. (Bulletin 4132). Osgood Company, Marion, Ohio.

INDUSTRIAL SAFETY PRODUCTS. (Folio). Kimball Safety Products Company, Cleveland.

NONCLOGGING SEWAGE AND SLUDGE PUMPS, 4 pages. (Bulletin 206-2). Lawrence Machine & Pump Corporation, Lawrence, Massachusetts.

THE NEW LEADER LIME SPREADER, 4 pages. Highway Equipment Company, Cedar Rapids, Iowa.

THOR PORTABLE ELECTRIC TOOLS, 66 pages. Independent Pneumatic Tool Company, Chicago.

Now . . . WHO'LL LUBRICATE IT? 12 pages. Fiske Brothers Refining Company, Newark, New Jersey.

MODERNIZE WITH MARION TYPE 362, 8 pages. (Bulletin 389). Marion Steam Shovel Company, Marion, Ohio.

KEYSTONE MODEL 51 BLASTHOLE DRILL, 8 pages. Keystone Driller Company, Beaver Falls, Pennsylvania.

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Complete plants designed and equipped, including Screens, Elevators and Conveyors. Machinery for Mines and Rock Quarries, Sand and Gravel Plants. Engineering Service.

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PERFORATED METAL SCREENS
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Any size or style screen, in thickness of steel wanted with any size perforation desired.

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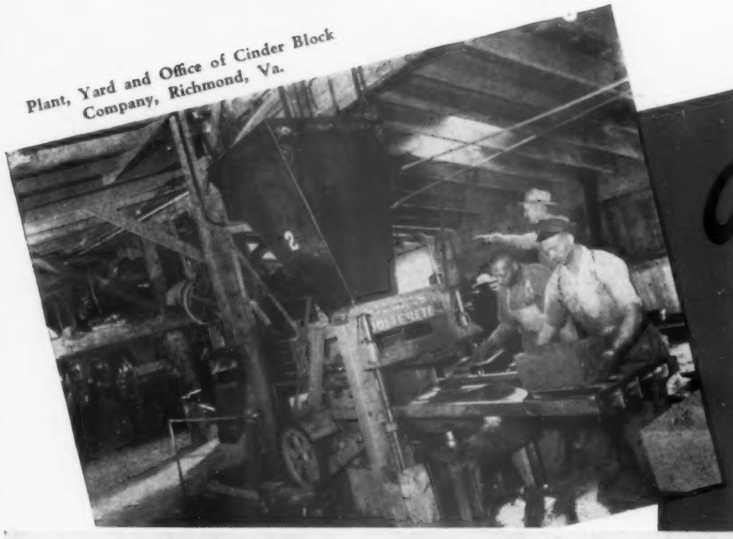
February, 1942

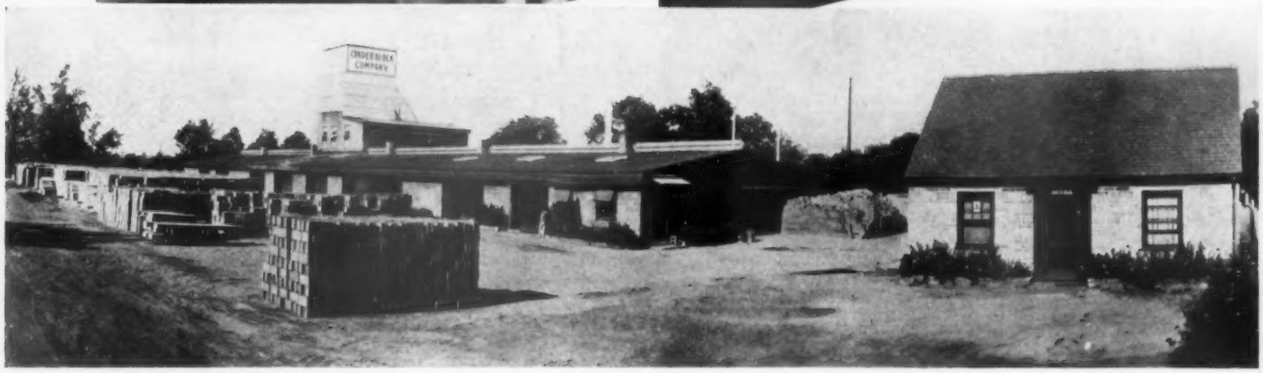
The CONCRETE MANUFACTURER

A Special Section of ... CONCRETE PRODUCTS



Plant, Yard and Office of Cinder Block Company, Richmond, Va.

another 3-Joltcrete plant!



OPERATORS of Stearns Joltcrete Machines get an *extra* profit on every block because their initial investment is so comparatively low. The cost of a Joltcrete installation is often only half that required for other equipment of the same productive capacity.

Write for Joltcrete Folder and full price information.

STEARNS MANUFACTURING CO., ADRIAN, MICH.

Vibration and Tamp Block and Brick Machines, Mixers, Skip Loaders.

Cinder Block Company Richmond, Va.

This is another growing concrete block plant which, after introducing Joltcrete blocks in its territory, has added a second and a third machine to satisfy the demand.

"Since changing to Joltcrete we find we can make *better* blocks, they are better *looking* and we are getting *more units to the bag* of cement than formerly."

Edmund A. Smith, Engineer.

The CONCRETE MANUFACTURER

★ Truly Portable and adaptable to any job from Roadbuilding to Central Mixing Plants—JOHNSON Bins will save money for you.

Leader—for 20 Years—in Bin Design

C. S. JOHNSON CO.

Champaign, Illinois

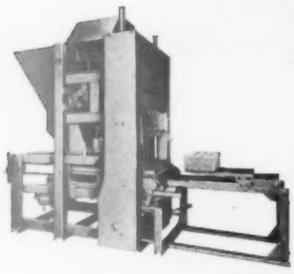
Other Johnson Equipment — BATCHERS — SCALES — CENTRAL MIX PLANTS—CONCRETE HANDLING EQUIPMENT

JOHNSON BINS ★

FOR EXTRA PROFIT

Either the improved JOHNSON Roadbuilder's Batcher or Multiple Material Batcher may be used on JOHNSON Bins—for dry batching or for charging truck mixers.

Multiplex MASTER CONCRETE BLOCK MACHINES



Our MULTI-MIXER with reverse screw action makes perfectly mixed concrete a "sure thing." Side, bottom and end discharge. Sizes 5 to 60 cu. ft. and larger.

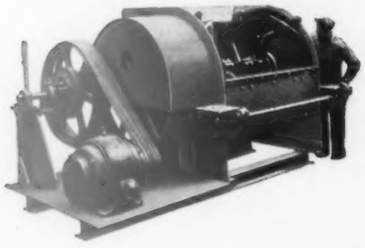
MULTICO

"IT'S A NIFTY—got just what we need for speed, capacity and economy!"

That's what concrete block makers have been saying about MULTICO since we introduced it last year.

MULTICO is the ONLY machine that combines pressure, vibration and tamping, with the capacity to produce 9 blocks per minute . . . absolutely uniform and perfect in shape, surface and dimensions.

MULTICO operates electrically or by compressed air. The pneumatic method eliminates many working parts, and sharply reduces costs.

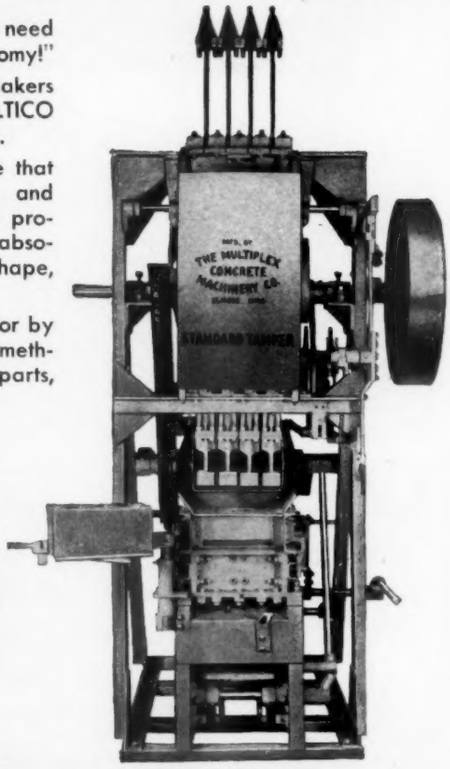


MULTIPLEX has a complete line of hand and power operated machines to fill every requirement of the concrete block producer. Choice of over 31 models available, in capacities from 400 to 3000 units per day, and in several sizes.

Complete products plants installed.

Write for Catalog with full details

The *Multiplex* CONCRETE MACHINERY CO., Elmore, Ohio



Standard 8 Bar Tamper

LOOK into SMITH-MOBILE

✓ Check these SMITH-MOBILE FEATURES

1 **HIGH DISCHARGE** — 27" to 34" higher than old-style truck mixers. No hoist or ramp required.

2 **CONTROLLED DISCHARGE** — pour it fast or slow. The concrete comes out in a smooth steady flow and without segregation.

3 **VISIBLE MIXING** — Open the door and look into drum while drum is revolving. Watch the mix. SEE what's going on inside.

4 **FEED CHUTE CHARGING** — Loaded on the level, no ramp needed. Easy to spot under bin.

5 **DRUM REVOLVES WHILE CHARGING**—Shrinking and mixing start instantly. Carries larger loads.

6 **NO LOADING HATCHES** to open or close. Driver can stay right in cab.

7 **NO LEAKY TROUBLESOME DISCHARGE DOOR** — Closing door on Smith-Mobile can be kept open during mixing cycle.

8 **WATER INTRODUCED THROUGH CHARGING OPENING**—for transit mixing, water nozzle located in top part of drum, well above concrete. High pressure pump furnished as regular equipment.

9 **STEEP DISTRIBUTING CHUTE FOR DRY CONCRETE** — Will spout dry concrete directly into high forms, buckets, concrete carts, etc., without pushing it down the chute.

10 **LARGER RADIUS OF SPOUT DISTRIBUTION**— Use the spout for pouring directly into forms instead of using carts or wheelbarrows.

11 **BETTER AND FASTER MIXING** — Scientifically designed T-shaped spiral blades provide a fast end-to-end movement of the aggregates.

REAL VISIBLE MIXING

...an Exclusive Smith-Mobile Feature

Enables the contractor, inspector or foreman to control the batch, make sure that the concrete is just the way he wants it—not too wet, not too dry, etc. At any stage of the mixing cycle (even with a full load), the door can be opened wide, and no concrete will come out until the drum is reversed. You can look right into the drum and actually SEE what's going on inside. Remember, Smith-Mobile is the ONLY truck-mixer that gives you this important feature. So, be sure to look into the PROFIT possibilities of this modern, high-discharge truck mixer. All standard sizes available, as truck mixers or as agitators. Write for catalog 198-A.

THE T. L. SMITH COMPANY

2887 N. 32nd Street **Milwaukee, Wis., U.S.A.**

Look into its History

Smith-Mobile is the ORIGINAL high-discharge truck mixer backed by 10 years of experience designing and perfecting high discharge truck mixers and more than 40 years' specialized experience manufacturing concrete mixers of every size and description. Hundreds of Smith-Mobiles are now in successful operation. So, why gamble with new and untried machines? Play safe! Buy SMITH-MOBILE!

SMITH

CONCRETE MIXER MANUFACTURERS SINCE 1900

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The CONCRETE MANUFACTURER

February, 1942

A SPECIAL SECTION OF PIT AND QUARRY DEVOTED TO PRODUCTION MARKETING AND USES OF CONCRETE PRODUCTS AND READY-MIXED CONCRETE

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J. W. Van Brunt Heads Sand-Lime-Brick Group

WHILE the National Concrete Masonry Association was holding its convention at the Hotel Buffalo in Buffalo, the Sand-Lime-Brick Association was holding its convention at the Hotel Statler in the same city on the same dates, January 12, 13 and 14. It was the 37th annual meeting of the sand-lime-brick group.

J. W. Van Brunt, Grand Rapids, Michigan, was elected president to succeed C. A. Perkins; Leo J. Ryan, Windsor, Ontario, Canada, vice-president; and J. Morley Zander, Saginaw, Michigan, was reëlected secretary-treasurer, a position he has held for many years. Members of the new executive committee include C. A. Perkins as chairman, J. A. Johnson, and Harold Levine. Elmer Coates was named as a special advisory member of the committee.

Mr. Zander presented a paper describing a new type of car for curing blocks; Carl Miller read a paper on increasing sales through unusual quality of product; Luther Randolph discussed the matter of changing from low- to high-pressure curing; J. W. Van Brunt dealt with improvements in the feeding of rotary presses; and Frank Perkins outlined the history of standards for the brick industry. Also there were papers on sales to government agencies by Frank Kilmeyer and Elmer Coates, but from different angles. Mr. Kilmeyer dealt with the matter in a general way and Mr. Coates talked of sales based on tests and specifications.

Resolutions were adopted expressing regret at the death of F. S. Lash, for many years an engineer with the Jackson & Church Company, Saginaw, Michigan, and well-known in sand-lime-brick circles throughout the country.

Those in attendance at the convention included the following: John Garcia, National Brick Company, Long Island City, New York; J. W. Van Brunt, Grande Brick Company, Grand Rapids, Michigan; Frank Perkins, C. A. Perkins and William F. C. Dall, Mishawaka Brick & Block Corporation, Mishawaka, Indiana; Leo J. Ryan, Ryan Fuel & Supply Company, Windsor, Ontario, Canada; Frank Kilmeyer, Block & Brick, Inc., Detroit; John Chinery, Atlantic Brick & Tile Company, Boston; J. A. Johnson, Gopher Brick & Flooring Company, Minneapolis; Carl Miller, Missouri Hardstone Brick Company, St. Louis; Elmer Coates, Mutual Materials Company, Seattle; Luther Randolph, Randolph Products Company, Ann Arbor, Michigan; George W. McDearman, Baton Rouge, Louisiana; J. Morley Zander, Saginaw Brick Company, Saginaw, Michigan; Ray C. Kiser, Crume Brick Company, Dayton, Ohio; E. M. Prettyman, Gray's Ferry Brick Company, Philadelphia; Harold Louden, Wholesale Brick & Supply Company, Flint, Michigan; Ernest Walter, Porete Manufacturing Company, North Arlington, New Jersey; Lawrence Hassenloff, Hassenloff Sand & Gravel Company, Buffalo; Harold Levine, National Brick Company, Long Island City, New York, and Mr. Sanderson, Toronto Brick Company, Toronto.

A complete line of Rex "Hi-Discharge" Moto-Mixers and Moto-Agitators is announced by the Chain Belt Company, Milwaukee. These truck-mixers are of new design and have many revolutionary features. Primary among these features are rear charging, an improved mixing principle, and a high discharging point for greater spouting range. These mixing, charging and discharging methods are designed specifically for fast up-to-date mixing and transporting of high-quality, low-slump concrete. It can place concrete over 20 to 22 foot areas on all types of jobs. Among other features is the completely inclosed anti-freeze water system, in which all water lines and valves are protected by the heat of the motor against freezing. Another is the improved chain-belt drive, and twin-clutch transmission. Yet another is the man-size inspection hatch with quick acting removable door, big enough to allow the passage of a man for drum inspection.

Practical Demonstrations Featured at 1942 Concrete-Masonry Convention

This photograph was taken at the buffet supper which followed the motion picture on Monday evening, January 12.

CONCRETE-BLOCK manufacturers, arriving in Buffalo in the wake of a howling blizzard that had piled drifted snow high and tied up transportation facilities, were well repaid for their efforts. Through the three days of the annual convention of the National Concrete Masonry Association at the Buffalo Hotel, they witnessed some interesting practical demonstrations in the use of their products and heard a number of enthusiastic speakers tell of the ever-growing public acceptance of concrete-masonry units in a wide variety of structures. As the main session got under way on the afternoon of the first day, Monday, January 12, every available seat in the hall was occupied and late comers had to be content to stand.

John L. Strandberg (Concrete Building Units Company, Kansas City), was elected president of the organization for 1942. Other new officers include: Walter Manhardt (Best Block Company, Milwaukee), first vice-president; Ray Berger (Martin Berger Cement Block Company, Detroit), second vice-president; and Harold L. Spaight (Cedar Rapids Block Company, Cedar Rapids, Iowa), third vice-president.

Fred W. Reinhold (Anchor Concrete Products, Inc., Buffalo) was renamed secretary-treasurer. John S. Chase (Chase Building Products Company) became chairman of the board, to which three new directors were elected. They are Herbert A. Davis (Washington Concrete Products Company, Arlington, Virginia), John Bailey (Atlanta), and Sam Paturzo (V. Paturzo Brother & Son, Inc., Baltimore).

A short business session opened the convention on Monday, with R. N. McCandless (Cinder Block, Inc., Detroit) chairman of the board, presiding. President Chase was in the chair at the first main session in the afternoon, which attracted the overflow crowd mentioned. This session, and those which followed, were built about the general theme of wall construction, how to achieve new and distinctive wall designs, and an analysis of the construction problems involved in various new types of walls.

First on the program was Arthur Stone (Stone Machinery Company, Syracuse, New York), who made a number of demonstrations with the masonry saw his company manufactures. More uses for this piece of equipment are constantly being developed in concrete-products plants. Perhaps its most interesting use is in the scoring of dummy joints in the block face to produce an ashlar effect. Many of these were prepared in advance to construct the wall sections to be described later. Another use demonstrated was the sawing out of some of the web sections, leaving the faces of the blocks intact so that the units may be used as lintels, or to admit reinforcing bars where code requirements made this necessary.

Lamont McCandless lays up the first wall section at the convention.

Units with broken corners were reclaimed by Mr. Stone by sawing away the damaged portions, leaving salable ½ or ¾ blocks.

Mr. Stone pointed out that special sizes can be quickly produced by sawing standard units, saving the time and expense of changing moldboxes on the machine when only a few specials are needed. Another use for the saw, he said, was developed by the West Coast Dunbrik Company of St. Petersburg where units are chosen at random by a prospective customer and cut to show the "inside quality" of the blocks.

"By offering your prospects units with scored dummy joints you have something to really sell besides an ordinary block," said Paul Woodworth (Portland Cement Association, Chicago) in introducing the wall-construction theme. He reported that one of Detroit's leading producers is now selling 60 to 70 per cent. of its entire output for exposed walls, both interior and exterior, and that the scored unit was a big factor in making this trend possible.

Lamont McCandless, master brick-

layer and brother of R. N. McCandless, was introduced by Mr. Woodworth as the man who would erect the demonstration walls, and he went into action erecting the first panel, every third unit laid being scored once horizontally near the top or bottom. The result was an attractive pattern, achieved at small cost, the mortar joints being tooled to the same depth and thickness as the scorings. Mr. Woodworth pointed out the importance of trim, unsmeared joints in this work when painting is to follow.

The second wall section, described as excellent for small-house construction and extremely popular in Florida and the Southeast, was laid up with 4-inch units, unscored, with a straight running bond. While this section was being built, F. J. Straub, introduced as the "grand-daddy" of the cinder-block industry, and, by his own admission, the "world's best brick-layer," took the microphone and offered some running comment on Mr. McCandless' artistry. He was followed by R. N. McCandless, who told of his early experience in the industry. Amazed at the poor units being sold in relatively large volume, he determined to provide Detroit builders with a uniformly good product, basing his determination on the premise that, if poor units can be sold in volume, quality blocks should be in tremendous demand. His success in the Detroit area over a period of years proves that he was right! He pointed out that the public judges the product by its appearance as laid up, not by a pile of units in storage, and this can be achieved only by using quality mortar and by good masonry workmanship. "Cultivate the friendship of the brick-layer and his craft and you go a long way in achieving this," he said. "And while I'm on the subject, call him a brick-layer—not a 'mason.'"

The third wall section was next built.

Paul Woodworth describes the painting technique as Walter Sherman executes the work.

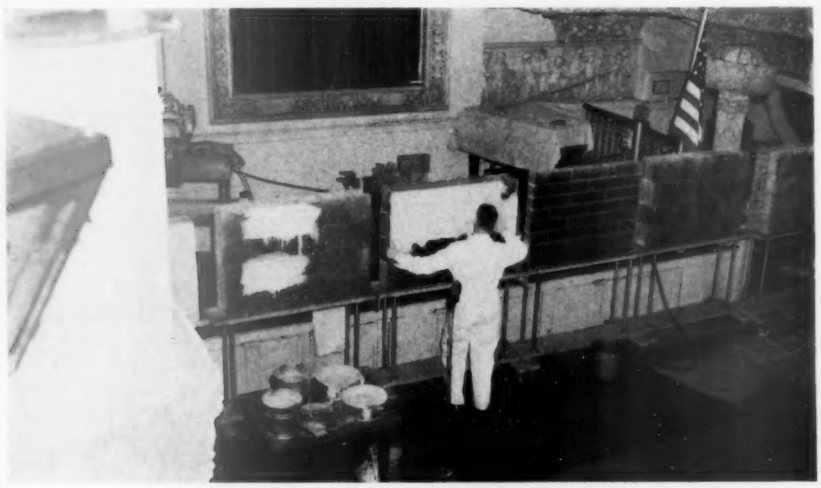
This was composed of 8- by 8- by 16-inch units, each scored once vertically through the center, giving the effect of 8-inch squares when the joints were tooled. This was the last to be built at the session on Monday. There were, however, a number of other pre-built panels on display showing other combinations of scored units with plain blocks in the smaller sizes, and with bricks. A section of the "cavity" wall, long popular in England but relatively new here, was also on display.

On Monday evening many of those attending the convention accepted the invitation of the Besser Manufacturing Company to witness the company's new motion picture and partake of a bountiful buffet supper afterward. The guests, more than 300 in all, were graciously received at the door of the Grand Ballroom by Mr. and Mrs. Jesse H. Besser. The picture, which took nearly an hour to present, was titled *Besserama* and afforded a glimpse of the production methods in vogue at many leading concrete-block plants. Featured was the plant of the Geist Coal & Supply Company at Cleveland, where the output of a Besser Super Vibrapac is transported into the kilns and yard by Towmotor lift-trucks. Mass handling of the cured units from storage to motor truck by Towmotor was also shown (see *P & Q*, December, 1941, pages 67-69, for complete and exclusive description of the Geist installation). Another new feature at the Geist plant, shown in the picture and described by Haakon Paulson, Besser's general sales manager, is the automatic stencilling of each block at the time it is made. This identification, compulsory in some cities, has always been a nuisance task for the manufacturer. The device shown in the motion picture is attached to the off-bearing hoist and a stencil and automatic paint sprayer do the job in an efficient manner. It also affords a trademark for each block.

Also of interest in the *Besserama* was the mass-loading method used by the Gray's Ferry Brick Company of Philadelphia. Here an overhead crane and a huge grapple lift out a cube of 100 or more blocks from the storage pile and carry them to a motor truck where the units are released intact upon the bed of the truck.

On Tuesday morning, with the wall panels lined up across the stage, Mr. Woodworth proceeded to paint the various panels, demonstrating and describing the technique as he applied the paint with stiff, short-bristled brushes of the type used to scrub floors. He explained that the paint must be worked into the texture of the block thoroughly to eliminate any "pin holes" through which moisture might enter. Ordinary calcimine brushes should not be used, nor is spraying recommended for the first coat, he said.

Mr. Woodworth explained that the recommended paints are those meeting the new Federal Specification TT-P-21. They are being marketed by several reputable manufacturers and, from



Paint being applied to one of the wall panels.

tests already carried out, the paints appear to be highly durable and present an excellent appearance when properly applied. The paint is marketed in powder form and from 65 to 80 per cent. by weight of water is added. When extremely coarse-textured walls are to be painted, white silica sand is sometimes added. The mixture must be stirred thoroughly and can usually be used up to 3 or 4 hours after mixing before segregation takes place. He cautioned against painting concrete masonry as a means to cover poor workmanship.

Concrete-masonry walls, said Mr. Woodworth, should not be painted until at least 28 days after erecting. Before painting, the surface should be thoroughly sprayed with water. At least two coats should be applied and not less than 24 hours should elapse before applying the second or third coats. He also urged that the painted wall be sprayed with water at least once between coats.

In reviewing the history of the application of Portland-cement paint to concrete-masonry walls, Mr. Woodworth said that the first work was done in the Detroit area in the early 1920's and that the results were quite satisfactory in most instances. Recent years have seen a remarkable growth in this type of finish, ten times as much area having been painted in 1941, as in 1938, he estimated.

At the conclusion of his talk and demonstration, Mr. Woodworth invited anyone in the audience to don a spare suit of cover-alls and paint the remaining panel to prove that the work was not too difficult. Walter A. Sherman (Best Block Company, Milwaukee) volunteered and did a top-notch job.

Ray McCandless, F. J. Straub and Lamont McCandless, master bricklayers all (by their own admission) pose in front of the wall sections.

The remainder of the Tuesday morning session was given over to talks by two Buffalo architects and a real-estate dealer. Speaking first, G. Morton Wolfe, who specializes in the design of commercial and industrial buildings, told of his early experiences with concrete blocks when rock-face textures and lack of uniform strength limited their use above ground. Now, however, he is a stanch supporter of this material because of the high quality of present-day units. He urged that the industry continue to strive for even greater perfection, pointing out that one of the great grocery chains recently decided to stop using blocks in erecting its stores because of several structural failures blamed upon inferior units. "It is up to you men to see that only top-grade units get on the market," he declared, intimating that unless this is accomplished to a high degree any maker of inferior blocks may find himself forced out of business by drastic action taken by the builders and architects themselves.

Mr. Wolfe, in closing his talk, made two suggestions: (1) that more color, more scored faces be made available to improve the laid-up appearance of concrete units, and (2) that more attention be paid to curing, declaring that too many "green" blocks are sold at present.

Some interesting merchandising ideas were brought out by John M. Brendell (George Wallace Realty Company, Buffalo). The Wallace concern has built and sold 80 small concrete-masonry houses in that area. Mr. Brendell told of visiting several years ago a Detroit cinder-block housing development which awakened his interest in the material. Before the first house his company built was completed it had taken orders for four more. Looking for selling arguments, he stopped in one hot July day to see a housewife living in one of these first houses. The outside temperature was 94 degrees but the thermometer in the house registered but 77 that day. "Cool in summer—warm in winter" became his company's slogan for concrete-masonry houses, and prospects, urged to visit some of the owners, learned the truth of this claim. Said Mr. Brendell: "We always take a good photograph of each house we build, send a print to the owner, and add one to the growing collection on one wall of the office. This collection is the best selling argument we possess—prospects pick out a design they like, pay the owner a visit—and sell themselves!"

Architect John De Forest (De Forest

There were no vacant seats at the annual banquet held on Tuesday evening, January 13.

& Son, Buffalo) has designed 200 concrete-masonry houses. His clients like them, he said, because (1) they are basically sound, (2) the concrete units can be combined pleasingly with other materials, (3) they are fire-safe, (4) they are easy to heat, and (5) they are cool in summer.

The idea of permanence is important to most buyers, Mr. De Forest said, since many of them plan to live for a long time in the house they buy or build. Concrete masonry assures them of that permanence.

On Tuesday afternoon many of those attending boarded buses and visited some of the concrete-block housing projects in and around Buffalo. Others made the trip to Niagara Falls to see this wonder of nature in its winter mantle of ice.

The Stearns Manufacturing Company, with "Gene" Olsen in the *role* of host, staged a cocktail party on Tuesday evening just preceding the annual banquet. This event was a "high" spot of the convention and, needless to say, attracted a huge crowd.

All tickets for the banquet had been sold hours before the event, including several emergency tables arranged on the balcony of the Grand Ballroom. After partaking of a particularly fine steak dinner, the guests were treated to some excellent entertainment and many enjoyed the dancing which followed. At the suggestion of E. W. Dienhart, assistant secretary, those attending the banquet subscribed wholeheartedly to a collection for the American Red Cross War-Relief Fund. More than $500 was realized.

The final session on Wednesday was devoted principally to a round-table discussion of the various wall sections. Mr. Woodworth explained various points, such as the installation of flashing and the bonding of the walls to the footings. A study of the cavity-wall section was of special interest. This panel, composed of two distinct 4-inch walls separated by a continuous 2-inch air space, illustrated a type of wall which provides the highest protection against heat loss and is growing in popularity because it eliminates the need for furring strips and lath, the inside plaster being applied directly to the wall itself or the wall may be merely painted or given any other decorative treatment.

Wire ties are used to gain stability and in some instances these are bent to form a V, allowing any accumulated moisture to drop away at the bottom of the V. The cavity is kept clean of mortar by pulling up a wooden strip attached to strings as the wall progresses in height. By filling the cavity with poured insulation, such as expanded vermiculite or rock-wool pellets, the insulation value is increased still more, Mr. Woodworth said.

An expected demand for large quantities of blocks in the erection of air-raid shelters in coastal cities was forecast by Mr. Dienhart. Another large market developed by the war will probably be the erection of inclosures for power transformers, the use of blocks instead of bags of sand for protecting store windows, and the temporary laying of thin, light-weight units over attic floors in residences to prevent the spread of possible fires by aërial incendiary bombs.

The OPM has requested that the concrete-products industry survey its 1940 and 1941 outputs, estimate the materials it will require for the current year, and determine its metals requirements for repairs and replacements. Mr. Dienhart announced that questionnaires are shortly to be mailed to all operators and that he expects little difficulty except for the repairs-and-replacements figures. The OPM. he said, desires that the requirements in this category be stated in pounds of the various metals, not dollar volume.

It was the unanimous opinion that individual estimates on metals would be far from complete, so the executive committee was empowered to make this determination from a few typical plants in various sections of the country and, using this as a basis, ascertain the entire industry's requirements.

Members of the National Cinder Concrete Products Association present at the convention held meetings on Tuesday and Wednesday afternoons to discuss association finances and research work in connection with their product. Cloyd B. Fellabaum (National Cement Products Company, Toledo), president of the association, presided at the gatherings of his group.

While the Buffalo meeting was officially the annual convention of the National Concrete Masonry Association, the attendance was drawn largely from within a 500-mile radius. Those living farther away will, for the most part, attend two regional meetings at which practically the same program will be repeated. These will be held February 2, 3 and 4 at the Muehlebach Hotel, Kansas City, and on February 16, 17 and 18 at the Atlanta-Biltmore Hotel, in Atlanta.

George W. Hoffman, sales representative for the Besser Manufacturing Company, had the honor of being farthest from home at the Buffalo meeting. He lives in Rio de Janeiro, Brazil.

Spraying the wall sections before painting.

★ ★ ★ ★ ★ ★ ★
★ Buy a ★
★ Security ★
★ That Means ★
★ Security ★
★ ★
★ .....A ★
★ DEFENSE ★
★ BOND ★
★ OR ★
★ STAMP ★
★ ★ ★ ★ ★ ★ ★

THIS ROAD-MAKER ALSO A BLOCK-MAKER

This general view shows aggregates being unloaded from a truck into the mixer and blocks being loaded on a lift truck.

THE R. M. Murphy Construction Company of Black Creek, Wisconsin, has been a road contractor for more than 15 years. As this business is rather uncertain and subject to seasonal and other conditions, it was decided about 10 years ago to produce crushed stone. A subsidiary, Black Creek Limestone Company, was formed for this purpose. It was not long before the crushed-stone business became nearly a full-time operation and the company's present plant has an hourly capacity of 20 tons of agricultural limestone and 40 tons of crushed stone. Two Good Roads portable plants supply materials for contracts.

This view of the block machine shows the pallet feed and the concrete conveyor.

Even this business has slack periods, however, and in June 1940 the company put in operation a concrete-block plant in order to provide steadier work for its employees. This business has also prospered and the block plant is now kept in fairly steady operation even during the winter.

The stone used in the blocks comes from the crushed-stone plant and the sand from a pit operated by the company at Medina, about 10 miles from the plant. A dry mix is used and 24 standard blocks are obtained per sack of cement. The blocks exceed all specifications for strength, moisture penetration, etc. They are used mainly for basements, partitions, back-up, etc., and are delivered in the company's trucks as far as 75 miles.

The equipment was first set up in a temporary wooden building while blocks were made for the permanent 50- by 80-foot structure which was then built around the equipment. This building is an excellent example of a modern small commercial structure and, because of its location on a main highway, has been a good advertisement for the company's products.

The trucks carry the aggregates into the building, where they are either dumped into piles or shoveled direct from the trucks into the 25-cubic foot Besser mixer. This is covered with a hinged safety grating through which the materials are dumped. The concrete, which is rather dry, is carried on an inclined belt-conveyor to the hopper

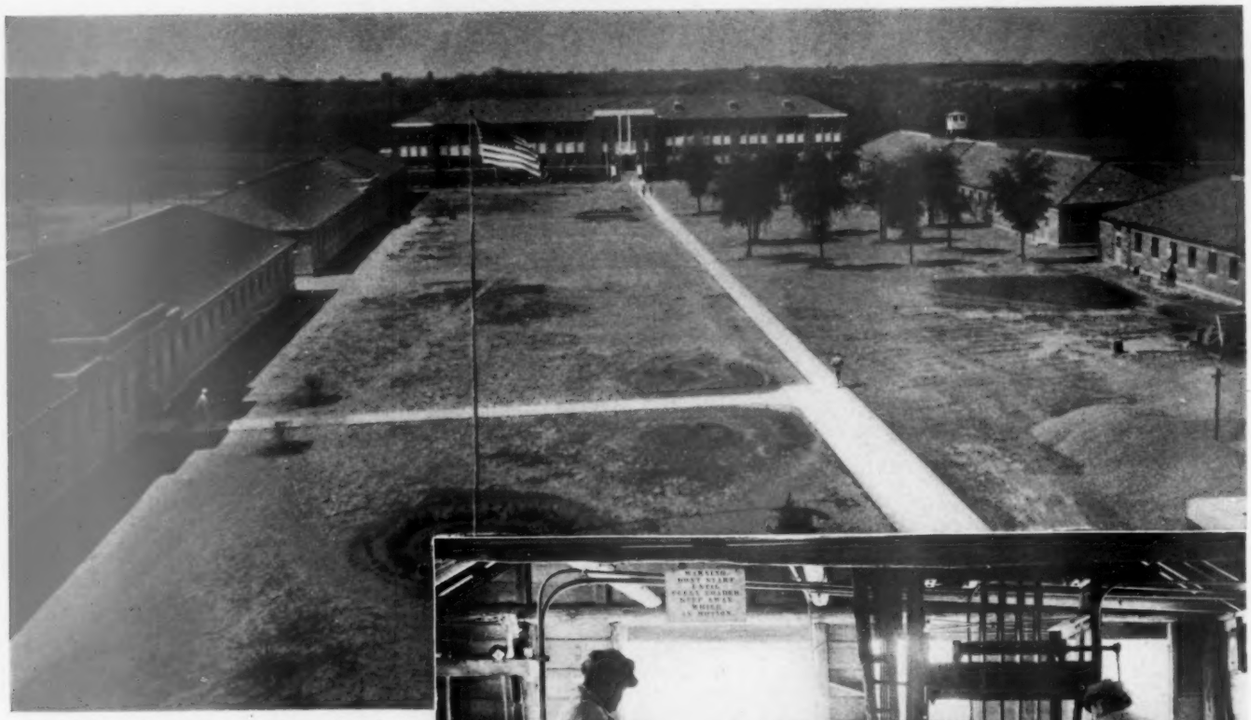
The 25-cubic foot concrete mixer with conveyor in background.

of the Besser "Victory" plain-pallet, fully-automatic stripper block machine. This has a capacity of 5 standard 8- by 8- by 16-inch blocks per minute.

The blocks come out of the machine on wooden pallets on a power-driven chain conveyor and are placed on 3-tier welded-steel racks. The loaded racks are taken away on a pneumatic lift-cart of the company's own design. This vehicle has two wheelbarrow-size pneumatic tires on its front wheels and four on the rear wheels. After 2 days of intermittent spraying indoors the blocks are moved to outdoor storage. A blower-type hot-air furnace keeps the building warm in cold weather.

The concrete-block plant building which was built of blocks produced while the machine was housed in a temporary structure.

BUILDING CHARACTER IN A CONCRETE-PRODUCTS PLANT



Quadrangle Court, Federal Correctional Institution.

THE Federal Correctional Institution, Tallahassee, Florida, one of seven like it in the federal prison system, is designed for first offenders and short termers and places primary emphasis upon reclaiming the inmate as a useful member of society. With the exception of the receiving building and kitchen, all the buildings have been built by the inmates, using concrete masonry units manufactured in their own products plant. The million-dollar building program involved in the project is about 75 per cent. complete.

Mixer and tamper in the block plant.

View inside one of the dormitories.

The institution has a nominal capacity of 600 inmates, and the present population is now closely approaching that figure. Twenty per cent. of the men going there are illiterate and are given academic instruction in reading, writing, arithmetic, and such higher courses as individuals among them are able to assimilate.

Vocational training is an important part of the program and a large percentage of the inmates receive instruction in brick-laying, carpentry, steamfitting and concrete-block manufacture. Agricultural training is also available on the surrounding 795-acre farm. Upon leaving the institution many of the men are fully equipped to enter industry as trained mechanics or to start small businesses of their own.

This program is patterned after the one carried out at a similar institution

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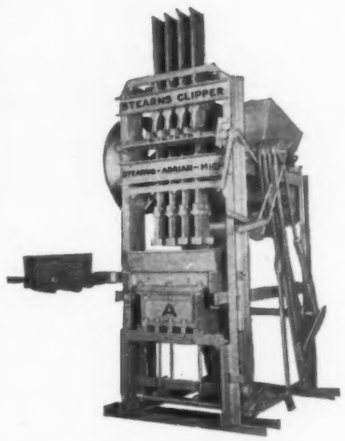

The Clipper Stripper, shown above, available in 5 models, is only one of the popular machines in the ANCHOR Line of Complete Equipment for the Concrete Products Plant. ANCHOR Engineering Service in the design of new plants or revamping older operations is nationally famous. Consult us before you buy equipment or modernize your plant . . . it costs no more.

Hobbs block machines, Anchor tampers, Anchor, Jr. strippers, Stearns power strippers and Joltcrete, Stearns mixers and pallets, Straublox oscillating attachments, etc. Repair parts for: Anchor, Ideal, Universal, Stearns, Blystone mixers and many others.

ANCHOR CONCRETE MACHINERY CO.
G. M. Friel, Manager Columbus, Ohio

in Chillicothe, Ohio, by Alfred Ogram, its supervising construction engineer, and the concrete-products plant is the direct outgrowth of the Ohio experiment. As soon as possible after the first building was completed here, Warden Ogram, at his new post of duty, established the plant for making concrete-masonry units, ordering the same make of machinery that had been used in the Chillicothe institution. Since then the plant has been in continuous operation, furnishing back-up blocks for all brick-veneer buildings. The entire output of the plant is used by the institution and the enterprise has proved a good investment entirely aside from the opportunity for vocational training it affords.

It requires only 6 men to operate the plant but the personnel is constantly being shifted so that the vocational instruction is spread among many. The men receive special instruction in the design of mixes, the physical action of cement, water-cement ratios, sampling of sand and other aggregates, etc.

The block plant occupies a frame and galvanized iron building 25 by 50 feet in size. Sand and gravel, dredged from the Chattahoochee River by private contract, are proportioned with the cement at the Stearns 12-cubic foot mixer. Full-sized, half, quarter, and split blocks are made with a Stearns eight-bar tamper working over a Junior Stripper.

Curing is effected under sheds with atomizer sprays for 24 hours. The blocks are then piled 8 high in the yard, covered with burlap and kept constantly wet for seven days. They are given three weeks' additional curing in the open, with occasional sprinkling.

Warden Ogram considers the block plant a very important rehabilitative tool. The block course is a popular one with the inmates, resulting in a constant waiting list of applicants. Incidentally, there are no walls around the institution, and the 8-foot wire fence would not offer a serious obstacle to any inmate earnestly wishing to leave. In the three years of operation only five men have left and, with but one exception, all were back within a week. Although it is not claimed that the block plant brings them back, they do think that the plant offers wanted training to many first-termers who use it as a spring-board for an honest and useful life after leaving the institution.

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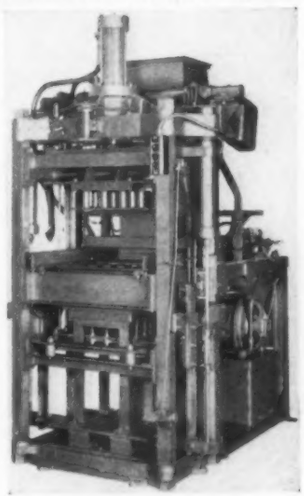

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Two of the three production machines in the Hudson plant at Washington, D. C.

Hudson Plant Making 500,000 Units a Month

MAKING half a million cinder-concrete units a month in an operating space 30 feet by 36 feet is the feat accomplished by the Hudson Supply & Equipment Company, Washington, D. C. High-speed production in such cramped quarters, while an achievement in plant management, is regarded by the company as a temporary condition, forced on it by a demand for the product increasing faster than plant area could be expanded.

The company makes only 12-inch units, in 4- and 8-inch widths, all 8 inches high. It was one of the first to place Stearns Joltcrete blocks on the market. Starting with one machine, the quality of the product made necessary the addition of a second and later a third machine, all three Joltcretes now being operated in the space originally devoted to the first manufacturing unit. The blocks are removed from the machines on steel racks handled by a gas-powered lift truck. One machine operates continuously on 4-inch by 12-inch solid blocks, the two others on 8- by 12-inch blocks. Much of the 8- by 12-inch product is solid too.

A typical day's run (8½ hours) provides over 21,500 units. Early last year the monthly average production was 428,500, but toward the end of 1941 it increased considerably. About 40 per cent. of the units made are 4- by 12-inch, 60 per cent. are 8- by 12-inch. The units test up to 1,100 pounds, though the code requires only 750.

Cinders are received in railway cars and unloaded by Koehring clam-shell bucket cranes. Reduction to the proper size is accomplished by a New Holland 16-inch single-roll crusher, powered by a 6-cylinder Buda engine to produce maximum speed and capacity. As a result of the unusual engine speed, a crusher designed to handle 5 cubic yards of cinders an hour is efficiently handling 15 cubic yards.

Mechanical Superintendent Austin King and J. A. Finfrock, in charge of the block plant.

Two Barrett-Cravens lift trucks are used for "spotting" the racks. Calcium chloride — 1,500 to 1,800 pounds — is used in a part of each day's run to hasten curing, which is accomplished in heated kilns with no moisture.

The Hudson Supply & Equipment Company conducts a large builders' supply business, deals in construction equipment (sales and rentals), has a subsidiary which designs and installs air-conditioning systems and, as an important factor in its activities, operates this cinder-concrete-block plant. E. Austin King is mechanical superintendent, the block plant being one of the departments under his jurisdiction. J. A. Finfrock is in immediate charge of the block plant and has worked out the details of plant operation which result in such a volume of production in so restricted a space and, incidentally, at remarkably low labor cost. Another important element in the low cost of production is the overhead benefit secured by comparatively low investment in block-making equipment.

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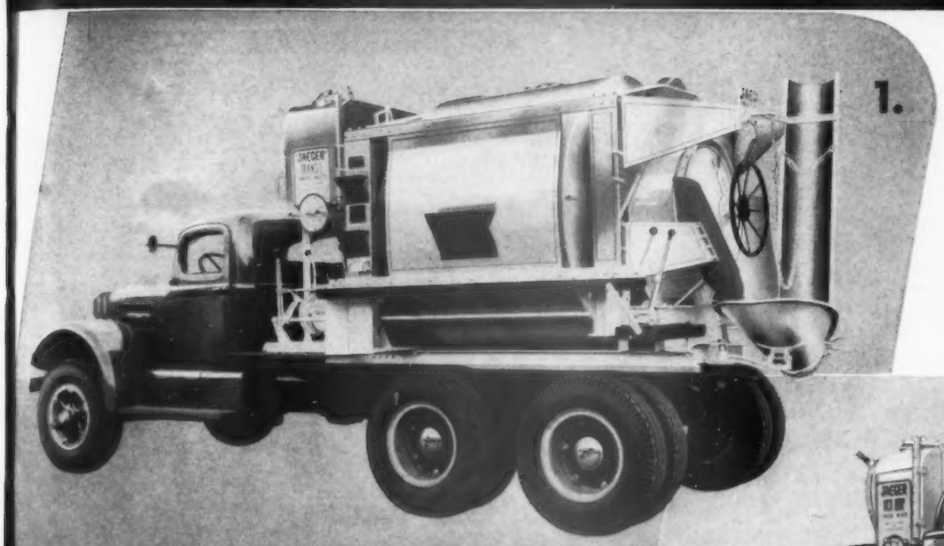

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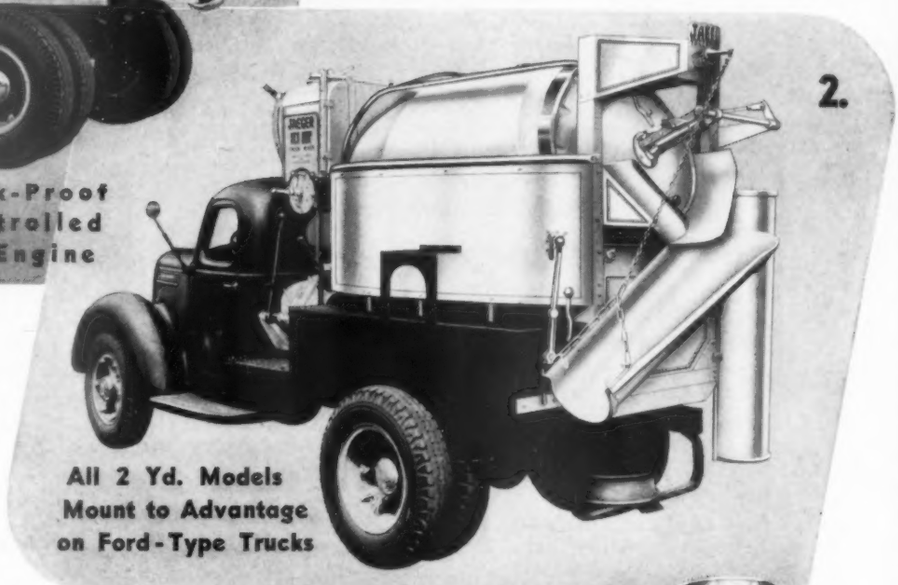

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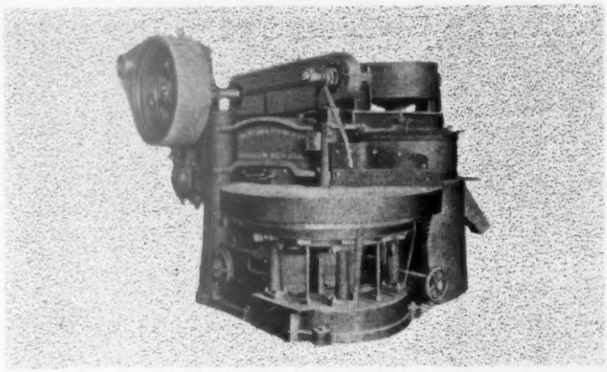

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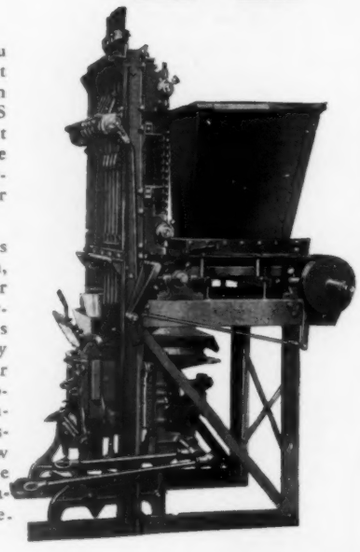

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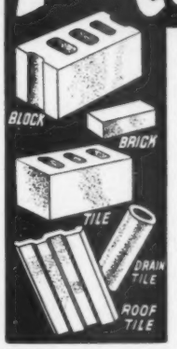

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The first cost of a SAUERMAN machine is reasonable, operation is an easy one-man job, maintenance expense is small.

SAUERMAN engineers will be glad to study your stockpiling and excavating problems. Their advice may help you to increase your profits. Investigation costs you nothing.

Write for catalog

SAUERMAN BROS., Inc., 534 S. Clinton St., CHICAGO

HOW TO HANDLE RAW MATERIALS *AT LESS COST*

1 Neff & Fry storage bins speed up handling . . . eliminate waste . . . step-up convenience . . . free men for other duties.

2 Neff & Fry bins provide a storage "reserve" . . . act as a "cushion" for smooth flow of materials.

N & F bins are quickly erected. Maintenance free. Thousands in service. Write for details.

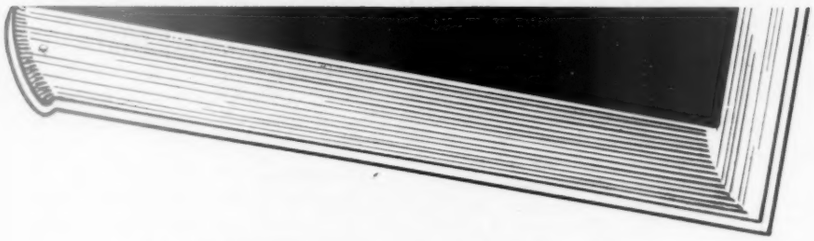
THE NEFF & FRY COMPANY
Camden, Ohio

The CONCRETE MANUFACTURER

An Indispensable Tool For Both Operator and Supplier of Equipment

The pit-and-quarry industries, in providing important basic raw materials, bear a large responsibility for the success of America's war effort. For the operator, the revised Technical Section of the 1942 Handbook provides a ready answer for many of his operating problems. For the concern supplying him with the tools and machinery necessary to produce his materials, the 1942 Directory Section supplies an accurate, up-to-the-minute list of all known producers of nonmetallic minerals and their products. Each new listing has been carefully checked for accuracy. Previous listings have been revised and brought up to date. Inactive firms have been eliminated.

1942 Edition Now Available



Directory Section listings appear two ways—(1) alphabetical by companies, (2) geographical by plants. You get company names, officers, location of plants, size or capacity, and the names of the men who do the buying. Choose the complete Handbook and Directory . . . or the convenient, flexibly-bound Directory alone. Order NOW and get one of the first copies off the presses. Use the handy coupon below.

• 880 PAGES • 18 CHAPTERS

• 15,000-NAME DIRECTORY • COMPLETELY INDEXED • AUTHORITATIVE

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538 S. Clark St., Chicago, Ill.

Please send.....copies of the 1942 HANDBOOK ($10.00 per copy) ☐ Check enclosed.....
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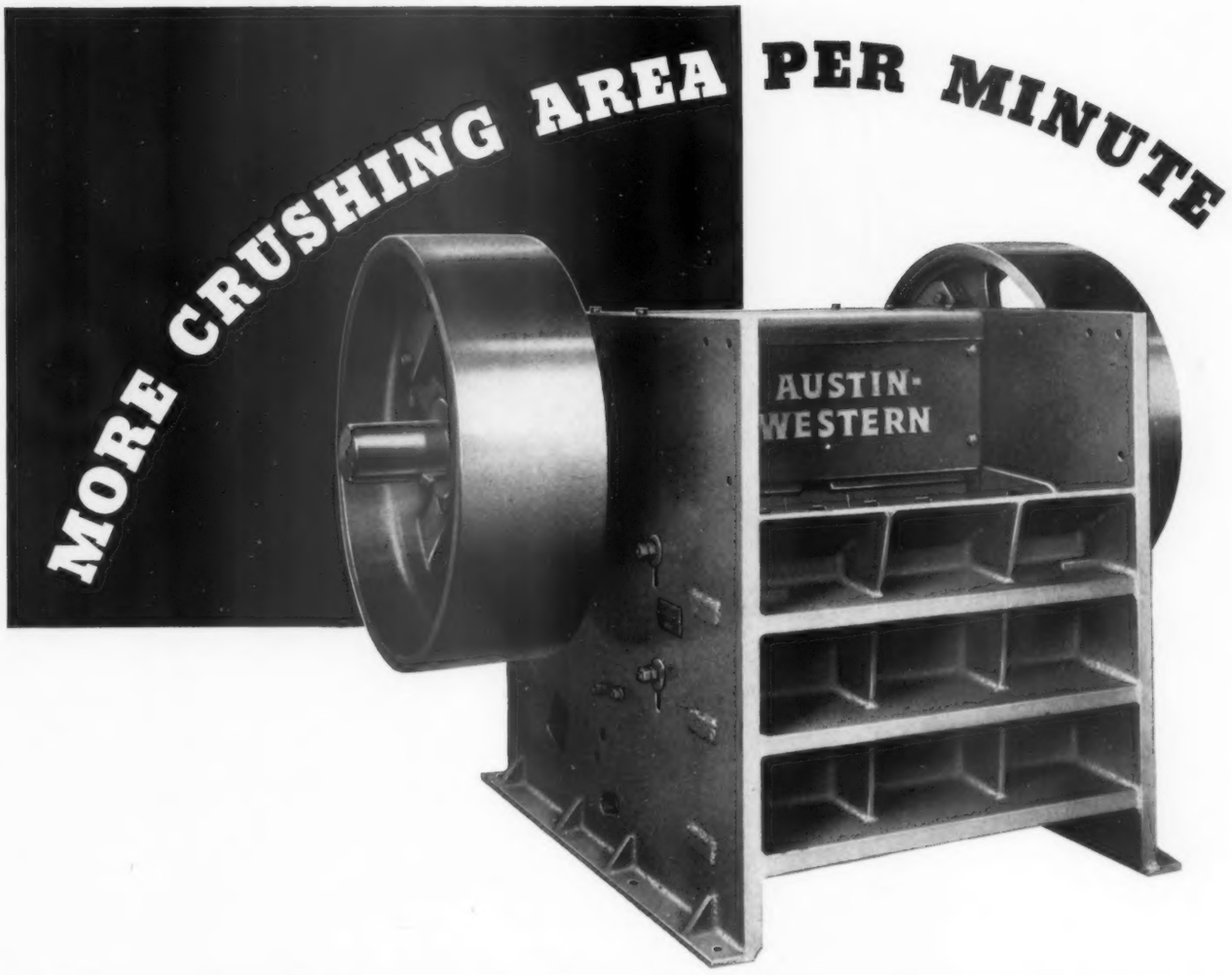
Name..... Title.....

Company.....

Town..... State.....



Gives A-W Crushers Outstanding Output

● Numerous construction and design advantages are responsible for the continuous full-load production of A-W Crushers . . . day after day . . . year after year. Extra large shafts and immense self-aligning roller bearings make possible smoother operation at higher speeds. Deeper crusher jaws, set at sharper crushing angles, increase output because the movable jaw moves more nearly parallel with stationary jaw.

A-W Jaw Crushers are made in the following sizes: 10" x 16" (bronze bearing); 10" x 20"; 10" x 36"; 12" x 20"; 15" x 20"; 18" x 38"; 21" x 38".

The A-W complete line of Crushing and Screening Equipment—all engineered to step up yardage, lower operating costs and prevent expensive delays—includes Roll Crushers in 30" x 18" and 40" x 22" sizes, conveyors, screens and bins for both fixed and portable plants.

Austin-Western's competent staff of trained men will gladly assist in the economical solution of your rock crushing problems . . . whether they be large or small . . . whether the requirements call for a complete new plant or the addition of equipment to modernize set-ups now in use. THE AUSTIN-WESTERN ROAD MACHINERY CO., Aurora, Illinois.

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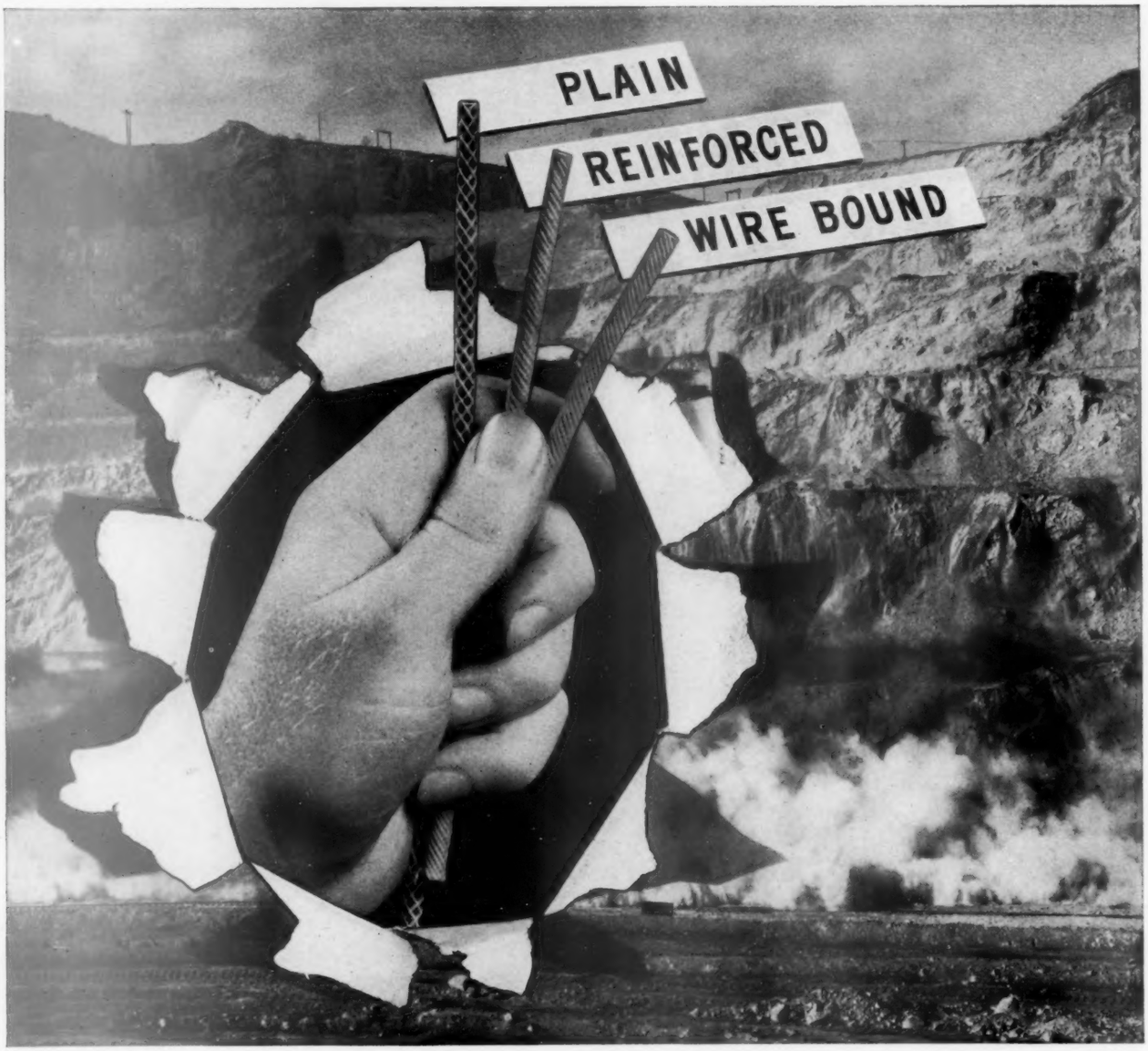

Four Sure Ways to Better Blasting

Yes—four! *First,* use Primacord-Bickford Detonating Fuse to detonate each cartridge in its hole and to connect all holes. This insensitive high-velocity detonating fuse, with a core of PETN in a waterproof textile covering, is tough, flexible, easy to handle and amazingly effective. It saves time in loading and connecting up holes—develops more work from explosives.

Second, use PLAIN Primacord for practically all holes and for general use in connecting holes.

Third, use REINFORCED Primacord in deep holes where extra tensile strength or resistance to abrasion is desirable.

Fourth, use WIRE BOUND Primacord for extremely ragged deep holes or where maximum resistance to abrasion is important.

Write for a free copy of the Primacord Booklet.

THE ENSIGN-BICKFORD COMPANY • SIMSBURY, CONN.

Manufacturers of Safety Fuse since 1836

PB-41

PRIMACORD-BICKFORD DETONATING FUSE

Instantaneous Dumping
IMPORTANT—Simplicity . . . no mechanical body hoisting machinery . . . dumping by gravity, instantaneously . . . saves seconds with every load . . . body is dumped by releasing body latch with lever.
KOEHRING
Making The Dirt Fly . . . Uphill
This action "shot" speaks! It tells the story, better than words, that the Koehring Dumptor dumps the load instantaneously, and uphill! Seconds are saved with every load! Every load is dumped instantaneously and completely, exactly where wanted. Being without mechanical operating parts for hoisting and dumping, the Koehring Dumptor does not consume time preparing to dump. The balanced body returns to loading position by force of momentum. Instantaneous gravity dumping cuts round trip time, increases production. Check your hauling operations and see how much time you are losing on the fill!
KOEHRING COMPANY • Milwaukee, Wisconsin
KOEHRING HEAVY DUTY
HEAVY-DUTY CONSTRUCTION EQUIPMENT

Banish Priority Worries

Coast Metals vastly prolong equipment life, saving money and eliminating priority "headaches." For example, the drag-line bucket pictured at the left, surfaced with Coast Metal No. 110 along the entire bottom, lip and knuckles has seen eight months steady service in a hot, highly-abrasive open-hearth slag dump without repair or attention. Other buckets working under the same conditions whose wearing parts are not protected with Coast Metal No. 110, require general overhauling every thirty days, including new wear strips, lip, knuckles, etc. After resurfacing with Coast Metal No. 110 at the points of severe wear (at a fraction of the original hard-surfacing cost) it will be returned to service by a highly satisfied Coast Metals user—the Edward C. Levy Company of Detroit.

Ask Coast Metals Engineers to recommend the correct type of hard-surfacing metals you should have to solve your maintenance problems.

Coast Metals can be secured from any of the Coast Metal distributors listed below:

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33 Wilkeson Ave.
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Metal Parts & Equipment Co.
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Hutchinson Sales Co.
Detroit, Mich.

S. C. Lum
983 Colonial Ave.
Union, N. J.

Weldcraft Equipment Co.
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Maryland Oxygen Co.
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Jos. Wagner Mfg. Co.
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New England Gas Products, Inc.
Charlestown, Mass.

Kanawha Welding Rod Co.
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J. B. Grane
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Presto Battery Co.
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Hill Equipment Engineering Co.
St. Louis, Mo.

Fetzer Equipment Co.
Youngstown, Ohio

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Steele and Pardridge
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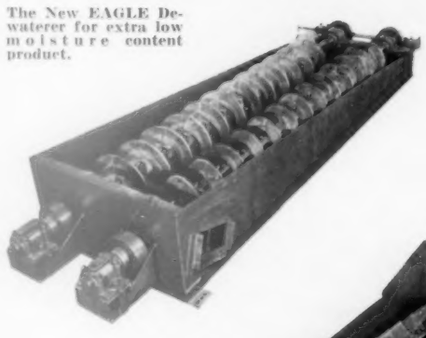
COAST METALS, INC., Canton, Ohio

NEW EAGLES *for Old Friends*

The New EAGLE Dewaterer for extra low moisture content product.



Sand and Gravel producers are congratulating us and priding themselves on the successful operation of these new EAGLE machines, introduced to the industry in 1941.

For a partial list of EAGLE users, and the location of the EAGLE installation nearest you, refer to the January, 1942 issue of this magazine.

The New EAGLE High-Efficiency Paddle-Washer for operators with moderate capacities.

"Good Concrete always requires Clean Aggregate"—this sound principle has been identified with EAGLE Equipment for many years.

EAGLE Washers and Sand Dewaterers are time-proved machines for high quality concrete, always a "priority" material for both industrial and defense purposes.

Equip *your* plant with "EAGLES" to insure maximum output of a premium product at record savings.

Write for Bulletin No. 41

EAGLE Products include: EAGLE Grinder, EAGLE Double Roll Crusher, EAGLE Dry and Wet Pans, Specialized Mining Equipment, "Swintek" Screen Nozzle Ladders.

EAGLE IRON WORKS • Des Moines, Iowa

"WE HAVE USED THIS BUCKET FOR 2½ YEARS AND RECOMMEND IT TO ANYONE WHO DEMANDS STEADY AND MAXIMUM PRODUCTION."

THE CITY EXCAVATING CO.

"We have long since realized," writes A. J. Carlozzi, president of The City Excavating Co., Cleveland, Ohio, "that your 1/2 yard Multiple Rope Bucket gives us far better service than any other make previously used, and we have used several other makes of buckets."

Williams Buckets are truly "built to last and move dirt fast". Each type we build has numerous features which have been developed by over 35 years of bucket engineering for contractors, dredging companies and steel mills. Always a leader in welded design, Williams Buckets now feature welded construction at vital points, using rivets only at certain sections where ultimate replacement may be required. Make your next bucket a Williams!

WELDED

ROLLED STEEL CONSTRUCTION for GREATER STRENGTH and SPEED

Send for individual bulletins giving full information on each type of Williams Bucket.

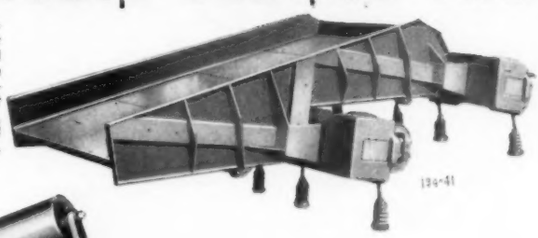
THE WELLMAN ENGINEERING CO.
7014 Central Ave. • Cleveland, Ohio

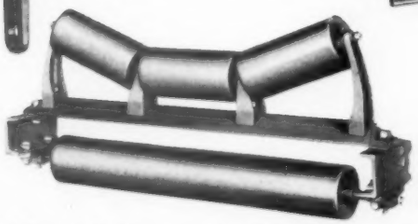
WILLIAMS *Buckets*
built by WELLMAN

CHECK THESE SERVICE FACTORS

A type and size chain for every conveying, elevating and power transmission need. Peerless, detachable and steel knuckle are shown.

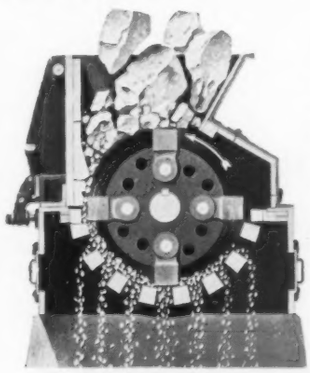
In handling quarry materials, of course you want economy, efficiency, and maximum freedom from costly and annoying maintenance problems. You get these in Jeffrey products, designed and manufactured for handling stone, gravel, sand, etc.





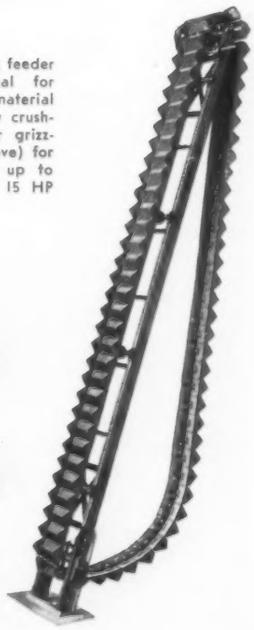
Jeffrey belt idlers are furnished in both troughing and flat belt types in widths from 14" to 60". Heavy steel rolls, accurately balanced and equipped with Timken tapered roller bearings.

Jeffrey-Traylor electric vibrating feeder (patented) J-T feeders ideal for handling large run-of-quarry material from surge hoppers to primary crushers, hammermills, trommels or grizzlies. Special large feeder (above) for handling 48" lumps at rates up to 2000 T.P.H. with maximum of 15 HP required.



Jeffrey-Traylor grizzly feeder (right) for by-passing fines ahead of primary and secondary crushers, screens, picking belts. Also electric vibrating screens and feeders (patented).

The Jeffrey Miracle hammer crusher (left) is used for reducing large pieces of limestone, shale, slag and cement rock. Steam shovel size to 1", 2", 3" or 4" and under in one operation.



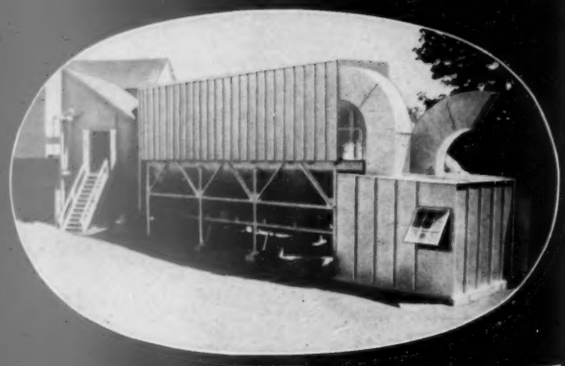
Operating conditions, capacity or class of material make no difference—there is a Jeffery bucket elevator to do the job. A complete line of standardized units. An inclined continuous elevator is shown right.

THE JEFFREY MANUFACTURING COMPANY

917-99 North Fourth Street — Columbus, Ohio

Baltimore	Chicago	Detroit	Milwaukee	St. Louis
Birmingham	Cincinnati	Harlan	New York	Scranton
Boston	Cleveland	Houston	Philadelphia	Salt Lake City
Buffalo	Denver	Huntington	Pittsburgh	Terre Haute

Master OF THE AIR



PARSONS OVAL BAG DUST ARRESTORS

DUST AND DIRT on the loose in any plant means costly inroads on the health of employees, the efficiency of the plant, deteriorating of machinery and buildings and the slowing up of production.

The cause is unavoidable but the cure is simple, positive and absolutely effective ... Parsons Oval Bag Dust Arrestors. Engineered and built to outperform and outlast them all, Parsons "Ovals" are backed up by an engineering staff with nearly a quarter of a century of experience in designing plus "Master Craftsmen" who take pride in the work they turn out.

Parsons "Ovals" maintain their efficiency for an average of more than ten years, staying new in filtering capacity because they will not plug when handling dust even from moist materials. Built for years of hard, tough going Parsons "Ovals" pay for themselves in no time and then go on paying dividends for years.

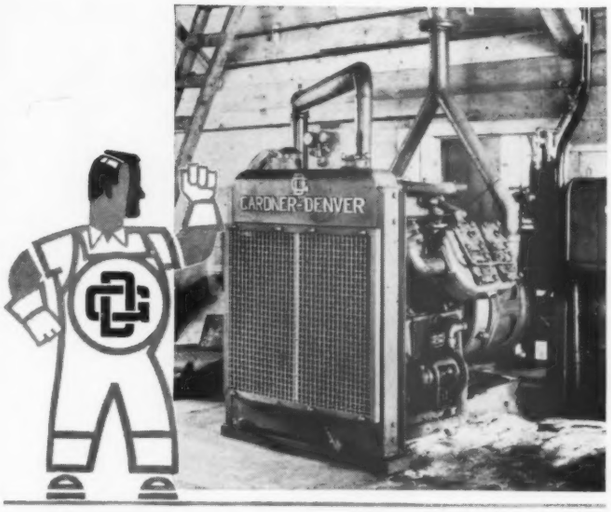
PARSONS
ENGINEERING CORPORATION
CLEVELAND, OHIO

RESULTS ... not promises!

Leadership isn't something that can be promised for, or argued into, a concern ... or a magazine. Leadership must be earned and won. Pit and Quarry has attained that leadership in its field by giving readers and advertisers alike what they demand in an industrial publication. As a result, Pit and Quarry leads in *total circulation* and *producer circulation* ... in *advertising volume* and *reader preference.*

Follow a leader ... subscribe for ... advertise in

PIT AND QUARRY



"MORE POWER TO YOU!"...

Says

"Gardy" DuMuch

The Gardner-Denver S-73 Sinker is known as "67 pounds of speed and power." It is easy to hold—drills more footage faster.

A COMPACT "package" of power to increase productive capacity! That's what "Gardy" DuMuch—symbol of Gardner-Denver superiority—gives you in the Gardner-Denver "WB" Vertical Water-Cooled Compressor. This rugged unit is specially designed to conserve space, has efficiencies comparable to those of larger machines. It's fully water-cooled for lubricating oil economy and cooler discharge temperatures. Castings of GarDurloy—the modern, high strength cast iron developed by Gardner-Denver—give extra strength and hardness where needed. Furnished with direct motor mounting or sheave for "V"-belt drive . . . displacement from 142 to 445 cu. ft. per min. For full information, write Gardner-Denver Co., Quincy, Ill.

GARDNER-DENVER PRODUCTS HELP SPEED VICTORY

USER REPORT FROM AN ALABAMA QUARRY—"The Gardner-Denver 'WB' Compressor in our Alabama quarry is used to supply compressed air to operate two wagon drills, drilling a total of 30 twenty-foot holes in hard limestone every ten-hour day. Our superintendent states that there is plenty of air at all times to operate these units . . . we are satisfied with our compressor and think it's tops!"

GARDNER-DENVER *Since 1859*

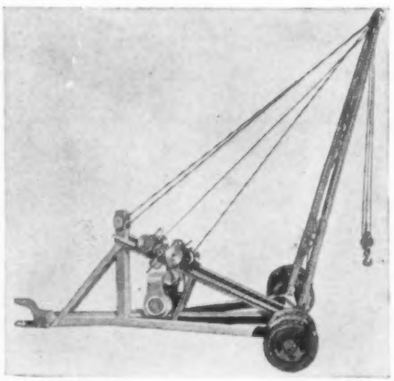
In Hibbing or Pittsburgh

DIAMOND CONVEYOR ROLLS

are a necessary link in steel production

Whether at the iron mines of Minnesota or the mills and factories of Pittsburgh or Saint Louis, DIAMOND conveying equipment daily carries tons upon tons of materials or manufactured products smoothly, quickly, economically and satisfactorily.

DIAMOND conveying systems can be applied to nearly any carrying problem in most any line of business. Ask for information and suggestions.

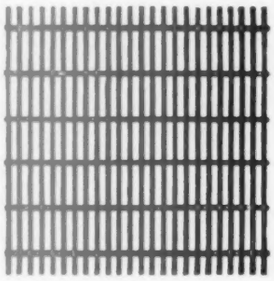


The PORTA CRANE is the answer to many a daily problem of lifting and moving on the job. Portable. Can be hauled from place to place. Will lift and move, and can even be used as a dragline. Ask for complete details and prices.

DIAMOND is making astonishingly prompt deliveries on conveyors, Porta Cranes, crushers, screens, etc. Write for prices and full information.

DIAMOND IRON WORKS, INC.
ESTABLISHED 1880
AND THE MARA MANUFACTURING CO. DIVISION
MINNEAPOLIS, MINNESOTA, U. S. A.

ALLOY No. 2



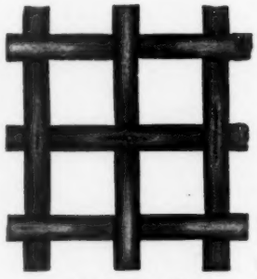
Rolled Slot

A super wearing Steel developed to resist the abrasion and vibration of modern screening demands.

"CLEVELAND" SCREENS

A wire cloth of guaranteed accuracy backed by fine workmanship and an effort to satisfy.

Available in Square Mesh and Rolled Slot. A trial will convince you of the superiority.



2 Mesh .162 Ga.

THE CLEVELAND WIRE CLOTH & MFG. COMPANY
574 E. 78th St. CLEVELAND, OHIO

DENVER HYDRO-CLASSIFIER

The Denver Hydroclassifier is designed for fine sizing and de-sliming problems where it is essential to reduce materials to sizes minus 200 mesh to 10 microns. Enclosed integral lift vertical worm gear drive makes it easy to raise rakes. The spiral rakes convey material to center cone in one revolution. Ask us how these machines will save you money. Write for new bulletin No. C4A-B.

Denver Equipment Co.
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Denver, Colorado

New York, N. Y., 50 Church St.
Salt Lake, Utah, McIntyre Bldg.
Chicago, Ill., 1005, 69 W. Wash.
Toronto, Ont., 45 Richmond St.
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ROTARY KILNS
GRINDING MACHINERY
for cement, lime, ores, etc.

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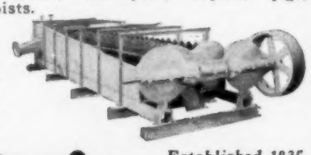
McLANAHAN EQUIPMENT

CRUSHERS

Single and double roll and jaw crushers, hammer mills, super dry pans—steel log washers and scrubbers, sand drags, revolving and vibrating screens, elevators, conveyors, dryers, jigs, hoists.

SCREENS

Complete portable, semi-portable and stationary crushing, screening and washing plants for different capacities of any materials.



McLanahan & Stone Corp. *Established 1835* HOLLIDAYSBURG, PENNSYLVANIA

ROUND
SQUARE
SQUAROUND*
HEXAGON
PERFORATED PLATE
of every description
for maximum productiveness from your vibrating screens.
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"Everything for Blasting"

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FORMERLY HOTEL PENNSYLVANIA

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Our courteous and competent staff will give you the utmost in friendliness, comfort and service. Conveniently located to all stations, and only five minutes away from the heart of the business section.

600 ROOMS each with bath from $3.00 up
RADIOS IN EVERY ROOM

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AMERICAN Crushers

Get top tonnages, *continuously*, with AMERICAN Crushers, built to deliver a high volume of product at low cost per ton. Rugged construction means long life, too. Manganese and other tough alloy steels, used in the right places, assure this. Capacities one to 100 tons per hour. Ask any experienced operator, or write us direct for all the facts.

AMERICAN PULVERIZER CO.
1059 Macklind Ave.
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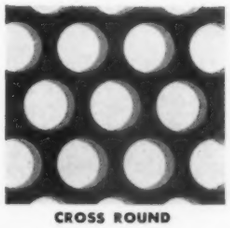
for AMERICAN Industry

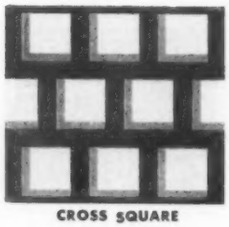
LOOKING FOR USED EQUIPMENT?

Refer to the listings in the Broadcast Section in this issue for a wide variety of used and surplus machinery and supplies.



CROSS ROUND

VITAL for AMERICAN INDUSTRY



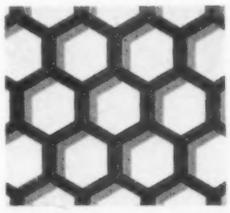
CROSS SQUARE

CROSS Perforated Steel Sheets and Plates are built for MAXIMUM CAPACITY and SUSTAINED OPERATION . . . the key to the "All-Out" Production Demands of Today.

They are recommended "Shock Troopers" in all operations requiring FAST, ACCURATE and ECONOMICAL Sizing.

Write for Illustrated Literature

CROSS HEXCREEN



CROSS Perforated PLATES and SECTIONS

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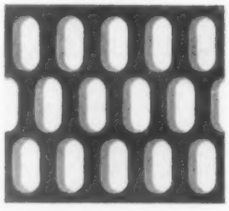
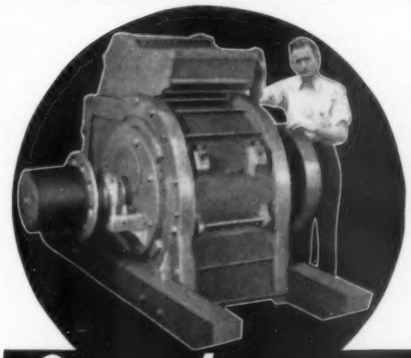
For Vibrating, Shaking and Revolving Screens

CROSS SLOT



CROSS ENGINEERING COMPANY
Main Office & Mfg. Plant, Carbondale, Penna.
Sales Agencies in Principal Cities



You can do more in a "DAY"
Swing Hammer PULVERIZER

Its wide crushing range makes it serve the purpose of two or more other types of crushers. Roller bearing equipped. Write for Bulletin.

Brooks EQUIPMENT & MFG. CO.
KNOXVILLE, TENNESSEE

IMMEDIATE SHIPMENT
LOW PRICES

NEW RUBBER

GUARANTEED
HIGH GRADE

CONVEYOR and TRANSMISSION BELTING

CONVEYOR BELTING ABRASIVE RESISTANT COVERS

Width	Ply	Top & Bottom Covers
48″	— 8	— 1/8″ — 1/16″
42″	— 5	— 1/8″ — 1/16″
36″	— 6	— 1/8″ — 1/16″
30″	— 6	— 1/8″ — 1/16″
30″	— 5	— 1/8″ — 1/16″
24″	— 5	— 1/8″ — 1/32″
24″	— 4	— 1/8″ — 1/32″
20″	— 5	— 1/8″ — 1/32″
20″	— 4	— 1/8″ — 1/32″
18″	— 4	— 1/8″ — 1/32″
16″	— 4	— 1/8″ — 1/32″
14″	— 4	— 1/16″ — 1/32″
12″	— 4	— 1/16″ — 1/32″

TRANSMISSION BELTING HEAVY-DUTY— FRICTION SURFACE

Width	Ply	Width	Ply	Width	Ply
18″	—6	10″	—6	6″	—5
16″	—6	10″	—5	5″	—5
14″	—6	8″	—6	4″	—5
12″	—6	8″	—5	4″	—4
12″	—5	6″	—6	3″	—4

ELEVATOR BELTING HEAVY DUTY— RUBBER COVERED

Width	Ply	Top & Bottom Covers
12″	— 6	— 1/16″ — 1/16″
14″	— 6	— 1/16″ — 1/16″
16″	— 6	— 1/16″ — 1/16″
18″	— 6	— 1/16″ — 1/16″

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"A"—WIDTH—All Sizes
"B"—WIDTH— " "
"C"—WIDTH— " "
"D"—WIDTH— " "
"E"—WIDTH— " "
Sold in Matched Sets

RUBBER HOSE

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STEAM — SUCTION —
FIRE — WELDING
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- 1—Williams 2XX Hammer Mill.

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- 6—Gould Pyramid Pumps 2″ to 4″.
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- 4—Williams, Gruendler Hammer Mills.

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1—65 H.P. Electric Motor, 220 volts
1—75 H.P. Electric Motor, 2300 volts
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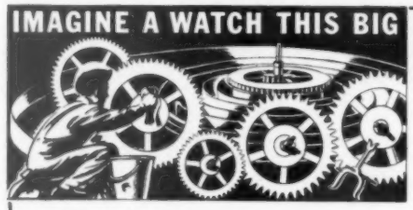

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Portable and stationary, belt with elec. or gas power, sizes from 20 cu. ft. to 1,000 cu. ft.

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Above with or without weight batchers. All of the above are 2 comp. bins.

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135—Clamshell: ½ yd. to 2 yd. Williams, Blaw Knox, Owen & Standard.
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13—Portable troughing, and flat belt type with cleats, 1—12″x18′6″; 1—24″x22′; 3—24″x40′; 1—14″x25′; 1—24″x50′; 1—18″x32′; 1—24″x30′; 1—18″x50′. National, Barber Greene, Stephens Adamson, Portable Machinery and Farquar.

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1—Link Belt K-55, ser. No. 1698, 70′ boom, 2 yd. bucket, also have a 2 yd. shovel attachment.

1—Link Belt K-48, ser. No. 1728, 60′ boom, 2 yd. bucket.

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2—Northwest Model 104, ser. Nos. 2079, 1386. 45′ boom, 1¼ yd. bucket; with 1 yd. shovel attachment.

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2—Northwest model 105, ser. Nos. 1645, 1522. 40′ boom, 1 yd. bucket.

2—Osgood Heavy Duty, ser. Nos. 2069 and 2087. 40′ boom, 1 yd. bucket and with 1 yd. shovel attachment.

2—Erie gas-air ser. Nos. 4365 and 9758 with 45′ boom and 1¼ yd. shovel attachment.

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1—Thew ¾ yd. gasoline shovel with ¾ yd. shovel front and 40 ft. crane boom. Serial No. 2801.

1—Koehring Model 301, ser. 544. 40′ boom, ¾ yd. bucket.

1—P&H Model 206, ser. No. 1901. ¾ yd., 40′ boom.

1—Byers Bearcat Model No. 128. ½ yd. cap., ser. No. 4119 with 30′ boom.

1—Byers Bearcat model 27, ser. No. 5289. 30′ boom, ½ cl. sw. ½ yd. bucket.

1—Erie Steam Crane, ¾ yd., 40′ boom.

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4—Jaw Crushers: 1—12″x20″ Acme; 1—10″x20″ Climax; 1—9″x16″ Acme; 1—2″x6″ Sturtevant.
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Illustrated specifications available—Other Types of Cars Too. Also Locomotives, Cranes, Shovels, Etc.

IRON & STEEL PRODUCTS, Inc.
13400 S. Brainard Ave. Chicago, Illinois
"ANYTHING containing IRON or STEEL"

FOR SALE

18″ x 36″ Stevenson Single Roll Crusher.
9″ x 36″ Wheeling Jaw Crusher.
9″ x 15″ Phillips Jaw Crusher.
#4 Champion Jaw Crusher.
#1 Williams Hammermill Crusher.

PITTSBURGH MACHINERY & EQUIPMENT CO.
Aspinwall Pennsylvania

Advertise Your

"Wants" and

Surplus Equipment

Consolidated Can Help You Overcome Today's Conditions

GYRATORY CRUSHERS

1—16" Telsmith.
1—18" Traylor Bulldog type.
1—20" Superior McCully.
1—27" Gates, with 100 H.P. A.C. motor.
1—#410-TZ Traylor, 10" feed, can be set to ½".
1—2' Symons Cone Crusher, fine bowl.
3—Kennedy #19, #25, #49.
2—Telsmith #2-H and #3-F.
1—#40 Telsmith, 5" feed ⅞" discharge; also #40 with 40 H.P. A.C. motor.

JAW CRUSHERS

48"x42" NERMCO; 24"x36" Allis-Chalmers; 9"x36" Wheeling; 15"x36" Universal; 18"x24" Blake, 18"x24" Pioneer; 10"x36" Farrel, and smaller sizes.

2—6' x 12' ROD MILLS

Hardinge straight side Rod Mills, iron lined, Falk herringbone steel gears, Falk enclosed gear drive units, charge of rods with each mill. Arranged for peripheral or trunnion discharge. In excellent condition and for immediate shipment.

ROTARY KILNS

5'x24', 7'x40', 6'x60', 7'6"x125'.

ROTARY DRYERS, Direct Heat

Ruggles-Coles, double shell: 5'x26', 5'x30', 6'x35', 5'6"x60'; 80"x45'.
Single Shell: 5'x30', 6x40, 6x50, 6x60, 7x60.

RAYMOND PULVERIZERS

2—4 roll HIGH SIDE, COMPLETE. Located Toledo. Must be removed by Nov. 10th. Priced accordingly.
2—2 roll HIGH SIDE, COMPLETE. Located Mobile, Alabama.
Nos. 0000, 00, 1 and 3, beater type. Also Nos. 55, 60, 90 "Imp" type.

VIBRATING SCREENS

1—4'x14' SYMONS, DOUBLE DECK.
2—4'x7' Leahy, 2 deck, motor driven.
4—3'x5' Tyler Hummer, 2 deck, No. 31, enclosed.
2—4'x7' Jeffrey-Traylor, Type FB-4, 2 deck.
1—3'x7' Simplicity, 2 deck, motor driven.
1—3'x8' 3'x10' Niagara, 3 deck.
1—4'x8' Huron, 1 deck, V-belt drive.

LIME HYDRATORS

Weber Sr. type, made by Arnold & Weigel with No. 1 Raymond Bros. Lime Separator; also Kritzer.
One Complete Hydrated Lime Plant.

BALL, ROD AND TUBE MILLS

Ball Mills: 6x6, 6x8.
Rod Mills: 4'x8', 6x12 Hardinge, straight side.
Tube Mills: 2—5x20' Bonnot Co., silex lined.
1—5x22' Bonnot Co., silex lined.
6'x23', 2—6'6x20' Smidth, silex lined.
5'x22' Allis-Chalmers, 5'x35' Vulcan, both iron lined.

HARDINGE CONICAL MILLS

Silex lined: 4'6x16", 5'x22", 6'x22", 6'x48", 8'x18", 8'x30".
Iron lined: 3'x24", with classifier; 4'6x16", 5'x22", 6'x22", 8'x18", 8'x30", 8'x36" with motor; 8'x48" with air classifier; 8'x48".

COAL PULVERIZERS

2—Erie City "Unitype" Size A, also Size C, with 60 H.P. motor.
4—4'x8' Kennedy; also 3'x6'.
3—Foster Wheeler Size J, with 150 H.P. motors.
2—Riley "Arrow" Size G.
2—#55 Raymond "Imp" with 60 H.P. motors.

CONSOLIDATED PRODUCTS CO. INC., 17-19 Park Row, NEW YORK, N. Y.

Our Shops and Yard at Newark, N. J., cover eight acres.

---

12 Ton Whitcomb Locos.—Gas, 36" Ga.
8 Ton Plymouth Locos.—Gas, Std. & 36" Ga.
7 Ton Whitcomb—Gas, 24" Ga.
14 Ton Vulcan Locos.—36" Ga. Steam.
1⅝ Yd. Hayward Clamshell.
1¼ Yd. Northwest Shovel attachment.
1¼ Yd. Bucyrus Erie 41B Shovel attachment.
Barber-Greene 42 Bucket Loader.
Erie B-2 Steam Crane, ¾ Yd.
40 Ft. Crane Boom, Erie.
15-Ton Steel Guy Derricks, 100' boom.
Electric Hoists—50, 60, 100 HP.

J. T. WALSH
Brisbane Building **Buffalo, N. Y.**

FOR SALE

1—48-Ton 0-6-0 Baldwin **Fireless** Loco. Built 1922. Good condition.
1—25-Ton 0-4-0 Davenport Loco., S. G. Immediate Delivery.
1—25-Ton Whitcomb Gasoline Loco. First-class condition.
2—24-Ton Heisler, geared, 36" ga. Locos., A.S.M.E. BOILERS.
2—60-Ton 0-6-0 S/T Switching Locos. Coal-burners. Excellent condition.
1—70-Ton 0-6-0 Switcher, first-class condition.

SEND US YOUR INQUIRIES FOR ANY KIND OF LOCOMOTIVES

IRON & STEEL PRODUCTS, Inc.
37 years' experience
13490 S. Brainard Ave., Chicago, Illinois
"ANYTHING containing IRON or STEEL"

FOR SALE

1—Farrell Jaw Crusher, size 20"x10".
2—Rotary Revolving Segment Screens, size 56"x18'.
1—Bucket conveyor, 44 ft. centers with 18" buckets.
1—Belt conveyor, 20" wide, 55 ft. centers. All complete with foot wheels and head wheels.
1—250 H.P. Fairbanks-Morse Slip Ring Motor, 600 RPM, 3 phase, 60 cycle, 2300 volts with secondary drum controller, resistance and panel board with oil switch, type BV.
1—Northwest Caterpillar Crane—40 ft. Boom.
1—Model 60 Caterpillar Tractor with Bulldozer.

Large quantity of Belting and Shafting.

S. GRAF
327 Hewes St. Brooklyn, N. Y.

Jaw Crushers—4''x8'' up to 66''x84''.
Crushing Rolls—16"x10" up to 54"x24".
Gyratory Crushers—No. 3 up to Mammoth.
Ring Roll Mills—No. 0, No. 1, No. 1½ and No. 2.
Swing Hammer Mills.
Rotary Fine Crushers—No. 0, No. 1, No. 1½ and No. 2.
Direct Heat Rotary Dryers—3½'x25', 4'x30', 5'x30', 5½'x40', 6'x50', 7'x50' and 8'x50'.
Semi-indirect heat Dryers — 5'x30' and 8½'x75'.
Cement Kilns—3' up to 8' diameter.
Hardinge, Marcy & Fuller-Lehigh Mills.
Raymond Mills—No. 00, No. 0, No. 1, No. 2 Roll.
2—6'x12' and 1—4'x10' rod mills.
Tube—Rod and Ball Mills—3' to 6' diameter.
Vibrating Screens—Air Separators.
1—4'x4' and 8'x6' ball mills.
New Dryers built for all purposes.

W. P. HEINEKEN
277 Fulton St., N. Y. **Tel.: Barclay 7-7298**

Ready to Ship
SILVER DUCK
Transmission

BELTING

10" 5 PLY 12" 5 PLY
10" 6 PLY 12" 6 PLY

ALSO 18" 4 PLY CONVEYOR

E. COHN & SONS
Cedar Rapids, Iowa

REBUILT TRUCK MIXERS

For Rent or Sale
All Sizes
With or Without Trucks

7—2 yd. Separate Engine Drive Truck Mixers, Mounted on Fords and Chevrolet—Good Running Condition, Now Working, Immediate Delivery. PRICE EACH.....$1500

27-E MULTI-FOOTE PAVER
Road Forms—Finishers

THE JAEGER-LEMBO MACHINE Corp.
Corona, N. Y.
Phone: NEwtown 9-7777

FOR SALE OR RENT

17-Ton Cap., **Brownhoist Loco. Crane.**
2—100,000 lb. Cap. **Steel-Underframe Flat Cars.**
1—36"-gauge **Nordberg Track Shifter.**
1—500-ton **Wheel Press, Shop Air Compressor** and other **Shop Tools.**
Dump Cars, Shovels, Draglines and **General Construction Equipment.**

WANTED

10 to 20 ton **PLYMOUTH** 36" gauge **Gasoline Locomotive.**

CLAPP, RILEY & HALL EQUIPMENT CORP.
14 North Clinton St. **Chicago**

CRANE

1—40-ton cap. Lorain-95 Diesel Crawler Crane, new 1939, D-17,000 Caterpillar Diesel Motor, 90 ft. Boom, plus 20 ft. Jib, overhauled Jan. 1942, immediate shipment, for sale or rental.

GREY STEEL PRODUCTS CO., Inc.
74 Central Ave. Glen Rock, N. J.
Tel. Ridgewood 6-2275

Bucyrus 50B steam shovel, 1¾-yd., power boom hoist, on cats., being overhauled.
Bucyrus 50B electric shovels (2); also 80B steam shovel, 2¼-yd., 50' boom, on cats.
Browning locomotive crane, 20-ton, steam.
G.E.-Cummins 100-ton Diesel-electric loco.
Milwaukee 12-ton gas locomotive, std. ga., MCB couplers, being overhauled; also others, 20 to 7 tons, 36"-30"-24" gauge.
Bucyrus-Monighan Walker draglines (2), 3-yd., Diesel & Electric, 70' & 80' booms.
Bucyrus 52-B Diesel dragline-shovel.
Brownhoist portal gantry cranes (2), electric.
Clyde 10-ton guy derrick, 70' bm., electric.
Bucyrus-Erie ⅞ yd. gas comb. shovel-crane.
Allis-Chalmers No. 12-K gyratory crusher, 27"-33".
Northwest 105 gas combination crane-shovel.
Pioneer and Diamond-Cedar Rapids portable gravel crushing and screening plants.
H. Y. Smith Co., 828 N. B'way, Milwaukee, Wis.

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NEW YORK — 30 Church St., Dept. ENR
PITTSBURGH — P. O. Box #933, Dept. ENR
PHILADELPHIA — 1503 Race St.

EQUIPMENT CORPORATION of AMERICA

WE SERVE 4 WAYS
BUY | REBUILD
SELL | RENT

4

OIL ENGINES—CENT. PUMPS ROCK CRUSHERS

NEW FANS—66750 CFM—2″-6″ STAT. PRESS. 32-TON CLYDE HYDRATOR.
1500 CFM COMP.—2 STAGE—SYN. MOTOR DR.
PIT AND QUARRY EQUIPMENT.

ROSS POWER EQUIPMENT CO.
Indianapolis, Indiana

1—CLIMAX MOTOR, Model R6U, 6x7 cylinders, 150 Horsepower.
1—Waukesha Motor, Model WL 340, 6¼x8 cylinders, 125 Horsepower.
Both units equipped with TWIN DISC CLUTCHES, and mounted on skids.

Ready to Go and Priced Right
INDIAN POINT STONE QUARRY
R. R. No. 2 Athens, Ill.

DIESEL ENGINES

Rebuilt—Like New

150 HP Fairbanks Morse, Complete.
66 HP Caterpillar; Power Take off.
60 HP Fairbanks Morse; Cold Start.
25 HP Worthington Full Diesel.
32 KVA Gen. D/C F-M Full Diesel.

H. & P. MACHINERY COMPANY
Diesel Engine Experts
5819 Enright Ave. St. Louis, Mo.

FOR SALE—A Good Time to Buy

Crushers, Gyr.—18N—10K—9McC—9K—8K
Crushers, Roll—54x24—42x16—4 ft. Cone
Crushers, Jaw—36x48—42x48—60x48
Derricks—Guy and stiff leg, 25 and 65 ton
Locos.—60 ton, 6 wh. switcher—20 ton S/T
Shovels—100B-37 Electric—50B—103C steam
Cranes—35 ton Brownhoist—18 ton Orton
A. V. KONSBERG, 111 W. Jackson Blvd., Chicago

WANTED

SAND and GRAVEL

SUPERINTENDENT

Superintendent for fully mechanized sand and gravel plant located in mid-South. Must be trained by technical education or equivalent experience in mechanical engineering, with ability to plan and supervise operation and maintenance of

Diesel and gasoline motors • pumps • pipelines • screens • washers and related equipment • also cranes • locomotives • tractors • transformers • motors and motor controls • dredges and pontoon floats.

Required to design working and power schedules and supervise and guide force of 50 men, 85% colored, and to have essential understanding of requirements for proper processing of sand and gravel in accordance with standard specifications. No consideration given unless applicant states age, full details of past record, experience, earnings and education. Liberal salary compensation for qualified man. Age preference 35 to 45.

REPLIES HELD IN STRICT CONFIDENCE
WRITE BOX No. 227

PIT AND QUARRY PUBLICATIONS
538 S. Clark St. Chicago, Ill.

WANTED

Draftsman experienced at detail work on vibrating screens by established manufacturer. Located in attractive small town. Position permanent. Write in confidence giving full particulars. Our men know about this opening.

BOX 212
PIT AND QUARRY PUBLICATIONS
538 S. Clark St. Chicago, Ill.

WANTED

Assistant Quarry Superintendent

For Work in Caribbean Bases. In Reply Give Full Details Regarding Age, Education, Experience together with Names and Addresses of Previous Employers. Personal Interview will be Arranged with Qualified Applicants.

❖

Plant and Planning Engineer

For Yard Layout, Design of Temporary Facilities Such as Warehouses, Job Office Buildings, Trestles, Gravel Plants, etc., for Work in Caribbean Bases. In Reply Give Full Details Regarding Age, Education, Experience, Together with Names and Addresses of Previous Employers. Personal Interview Will Be Arranged with Qualified Applicant.

BOX 233
PIT AND QUARRY PUBLICATIONS
538 S. Clark St. Chicago, Ill.

WANTED

Sales Engineer—Experienced in layout and estimating of conveying equipment as used by contractors in handling of sand, gravel and other materials. Sales experience desired.

BARBER-GREENE COMPANY
Aurora, Illinois

WANTED

2—2 or 2½ Cu. Yd. Dippers for use on Model 60 or 70, Marion or Bucyrus-Erie Shovels.

CAMPBELL LIMESTONE CO.
Liberty, South Carolina

WANTED—POWER MACHINERY

Boilers, steam engines, turbo generators, diesel engines, motor generator sets, large motors, air compressors, pumps, overhead traveling cranes, steel buildings. Purchasing Dept. —

BOX 203
PIT AND QUARRY PUBLICATIONS
538 S. Clark St. Chicago, Ill.

WANTED TO BUY

Complete Plant to Produce 2 to 3 Tons Per Hour Mine Dust From 2″ High Calcium Rock From Open Quarry—Good Used Machinery Will be Considered. Address all replies to

BOX 224
PIT AND QUARRY PUBLICATIONS
538 S. Clark St. Chicago, Ill.

WANTED

Suction or Clam Shell Dredger, Dredger Pipe, also Machinery and all Kinds of Equipment.

WESTERN DREDGING & EQUIPMENT CO.
1911 Grave St. Oakland, Calif.

WANTED

Jaw Crusher. Good condition. Size 15″ or 18″x36″. State price, location and particulars.

Address Box 230
PIT AND QUARRY PUBLICATIONS
538 S. Clark St. Chicago, Ill.

WILL BUY NOW

5—24 in. & 30 in. Conveyors.
36x48 Jaw Crusher.
4 ft. or 5½ Symons Cone Crusher.
1—20,000 or 2—10,000 gal. Tanks.
25 Ton Locomotive Crane.
50 Ton or Larger Locomotive.
2½ to 4 yd. Quarry Shovel.
20 Std. Ga. R.R. Cars.
350 to 500 H.P. Diesel Unit.
100 Ft. Boom Stiff Leg Derrick.

P. O. BOX 679
DARIEN CONNECTICUT

WANTED TO BUY

1—3 compartment aggregate storage bin—30 capacity. With or without batching equipment for concrete.
Conveyor equipment for 300 ft. of 18 or 20 inch belting.
Prices on up-to-date Concrete Ready-Mix mixers.

Quote prices delivered to Logan
JOHNSON SAND AND GRAVEL CO.
595 E. 1st South Logan, Utah

WANTED

Used Gravel Crushing and Washing Plant, 75 to 200 yd. per hr. capacity

W. A. RUPP
Marshallville, Ohio

WANTED

3—Loco. Cranes, Steam 25 to 40 ton cap.
3—Locos. Gas, Std. Ga., 15 to 35 ton cap.
2—Locos. Steam, Saddle tank, Std. Ga., 40 to 60 ton cap. Code Boilers.

L. H. DIMICK
200 Railway Exchange Bldg., Chicago, Illinois

WANTED

30x18 double roll crusher, Iowa or Universal make.

EMPIRE SAND & MATERIAL CO.
Marshalltown, Iowa

WANTED

One good used 10 inch feed Gyratory Crusher. Give full description, condition and price. Address replies to

SUBURBAN INDUSTRIES, INC.
P. O. Box 511 Ardmore, Penna.

WANTED

Late model 24x36 jaw crusher or slightly larger. Feeder for 36″ jaw crusher.

Address all replies to
BOX 209
PIT AND QUARRY PUBLICATIONS
538 S. Clark St. Chicago, Ill.

WANTED TO BUY

Three or four roll high side Raymond mill complete with double cone vacuum separator six or seven feet in diameter. Must be in good usable condition. State age, complete description, location and lowest price.

Send replies to
BOX 215
PIT AND QUARRY PUBLICATIONS
538 S. Clark St. Chicago, Ill.

WANTED

End Dump Quarry Cars—Approximately 7 cu. yds. cap.—Std. Ga. with 24″ wheels.

Address BOX 221
PIT AND QUARRY PUBLICATIONS
538 S. Clark St. Chicago, Ill.

DEPENDABLE USED EQUIPMENT

1—Compressor, 468 CFM Sullivan Angle Compound, 2-stage, belt type ..... $ 1350.00

1—Compressor, Sullivan Angle Compound, 690 CFM, 2-stage..... 2975.00

1—Compressor, 210 CFM Gardner-Denver Portable, powered by "Caterpillar" Diesel 7700 Engine. Two months old..... 4250.00

1—Crusher, Good Roads 10x40 Jaw Type, roller bearings..... 2850.00

1—Crusher, Wheeling 10 x 30 Jaw Type Roller. Rebuilt, A-1..... 1675.00

1—Crushing Plant consisting of: 13x24 Wheeling Roller Bearing Jaw Crusher; one 1' x 18" Intercone Crusher; 30' Elevator; one 3'x8' Double Deck Screen; one Telsmith 24"x8' Belt Conveyor.....Price on application

1—Crusher, 2-roll Diamond 26"x20", smooth rolls 975.00

1—Crusher, Universal 15 x 36 Jaw Type, overhead eccentric, bronze bearing 3150.00

1—Crusher, Universal 9x30 Jaw Type, bronze bearing. Good condition.. 1500.00

1—DIESEL ENGINE, FAIRBANKS-MORSE, 560 HP AT 275 RPM. ALMOST LIKE NEW..... 16500.00

1—Diesel Engine, "Caterpillar" Diesel D8800. Completely rebuilt. 1875.00

4—Vibrating Screens, Universal single deck 3'x8'.....Each 250.00

1—Vibrating Screen, New Holland, 2-deck 3'x8' 800.00

1—Shovel 1¼ yd. Lorain #57. Excellent condition 9500.00

1—Shovel and Combination Crane, Bucyrus-Erie 10-B, 30' crane boom 3950.00

1—Shovel, ⅝ yd. Speeder, standard machine, gasoline powered. New in 1939 ..... 4500.00

1—Shovel, ¾ yd. Marion Heavy Duty. A-1 condition..... 7500.00

1—Shovel, Lorain Model 40. One year old, first-class condition.... 8250.00

1—Shovel Combination Crane, Hanson ⅜ yd., 30' crane boom. Almost like new..... 4000.00

1—Sauerman 5-ton tautline Cableway, for 540' working span. Never used but on one job..... 1200.00

ROY C. WHAYNE SUPPLY CO.
800 West Main Street
LOUISVILLE KY.

STANHOPE OFFERS!

AIR COMPRESSORS
BELTED: 355, 528, 676, 1000, 1300 & 1570 Ft.
ELECTRIC: 478, 676, 807, 1302, 1722 & 2850 Ft.
DIESEL: 105, 315, 420, 603, 807 & 1000 Ft.
PORTABLE GAS: 110, 160, 220, 310, 540 & 1300 Ft.
STEAM: 49, 310, 528, 1300 & 2200 Ft.

BUCKETS
50 Skips and Battleship Type, 2 to 6 Yds.
5 Owen & Bucyrus Rock Grabs.
CLAMSHELL: ½, ¾, 1, 1½ & 2 Yds.
ORANGE PEEL: ¾, 1, 1½, 2 & 3 Yds.
DRAGLINE: 1, 1¼, 1½ & 2 Yds. Cap.

CRANES & DRAGLINES
5 Ton BROWNHOIST, 30 Ft. Boom Gas.
12 Ton NORTHWEST 50 Ft. Boom Gas.
12 Ton KOEHRING 45 Ft. Boom Gas.
16 Ton Speedcrane, Gas, 50 Ft. Boom.
25 Ton BROWNING & 30 Ton AMERICAN Locomotive.
25 Ton LINK BELT K-48 Electric, 70 Ft. Boom.
2½ Yd. Lorain Model 95, Diesel Dragline.

CATERPILLAR SHOVELS
½ Yd. P. & H. Gas & ⅜ Yd. Insley Gas.
¾ Yd. KOEHRING Gasoline.
¾ Yd., 1¼ Yd., 2 Yd., 4 Yd. & 8 Yd. MARION Electrics.
1 Yd. NORTHWEST Gas & 7/8B2 Steamer.
1⅛ Yd. BUCYRUS 41B Steamer.
1½ Yd. Lima 750 Diesel.
1½ Yd. KOEHRING 601—Gas.

OIL DISTRIBUTORS' TRUCKS
3—1000 gal. ETNYRE Mack.

DUMP CARS
46—KOPPEL 1½ Yd., 24 & 30 In. Ga., V Shaped.
15—2 Yd., 3 Yd., 4 Yd. 36 In. Ga.
20—Std. Ga. 12 Yd., 16 Yd., 20 Yd. & 30 Yd. Cap.

BALL, ROD AND TUBE MILLS
6x8 Continuous Pebble Mill.
5x5 Batch Mill.
5'x22" HARDINGE CONICAL Dry Ball Mill.
6'x22" HARDINGE CONICAL Pebble Mill.
4x8, 8x6, & 10x9 Straight Ball Mills.
8'x22" HARDINGE CONICAL Ball or Pebble Mill.
4x16, 5x18, 5x22, & 6x22 Tube Mills.
3½x8 & 5x7 Air Swept Tube Mills.
2x4½, 5x12 and 6x12 ROD MILLS.
4x16 Smidth Tube Mill Silex.
5½x20 Smidth Tube Mill Mang. Lining.
5½x18 P & M Tube Mill Silex.

PULVERIZERS
No. 1 Sturtevant Ring Roll.
RAYMOND Auto. Pulverizer No. 0000, 0 & 3.
RAYMOND Imp Mills No. 4, 32 & 55.
GRUENDLER XXB Mill & Jay Bee No. 3 & 4.
RAYMOND 4 & 5 ROLL MILLS & 5 Ft. Chaser Mill.

SEPARATORS AND COLLECTORS
14 ft., 8 ft. and 12 ft. Separators

ROLL CRUSHERS
36x60 Fairmont Single Roll.
36x20 Diamond Double Roll.
24x24 & 36x16 & 36x20 Diamond Double Roll.

JAW CRUSHERS
10x8, 13x7½, 14x7, 15x9, 15x10, 16x9, 16x12, 16x10, 18x11, 20x8, 20x6, 20x10, 20x12, 20x11, 26x12, 30x15, 30x13, 36x30, 36x18, 36x14, 36x15, 36x9, 36x6, 38x18, 36x10, 36x24, 42x9, 48x36, 60x42, 84x66, 36x16, 9x36.
30x10 Gruendler Roller Bearing.

CONE & GYRATORY CRUSHERS
18 in., 24 in., 30 in., 36 in. and 48 in. Symons Disc.
21K & 18N Allis Chalmers.
4—10 TZ Traylor 4 Ft. Gyratory.
4—Nos. 5, 3 & 6 Austin Gyratory.
2—Traylor T-12 Bulldog Gyratory.
8 in. Traylor T. Gyratory, Telsmith No. 9.
17 Gates K—Nos. 3, 4, 5, 6, 7½, 8 & 9½.
10 Inch Austin Model 105.
6, 10 & 13 Inch Superior McCullys.
KENNEDY: Nos. 19, 25, 27, 39 & 49.
16" Traylor.
7 Ft., 5 Ft. and 3 Ft. Symons Cone.

DRILLS
4—SANDERSONS 14 & LOOMIS 44.
7—Ingersoll-Rand Wagon Drills, FB & M2.
29T ARMSTRONG Well Drill.

HOISTING ENGINES
7 Gasoline 15, 40, 60 & 100 H.P.
17 Steam 7x10, 8½x10 and 10x12.
8 Electric 20, 35, 50, 60, 100 & 150 H.P.

HAMMER MILLS
4 Jeffreys: 24x18-A, 36x24-B, 42x36-E & 42x48-B.
Williams No. 1 Jumbo Jr., & No. 6 Universal.
Nos. 4, 6 & 8 Williams Jumbo.
No. 36 Am. Ring Roll.
Gruendler No. 6X.

STEEL BINS
72 Ton BLAW-KNOX 2 Compt.; also 250 ton.
100 Ton BLAW-KNOX 2 Compt.

CEMENT BIN
400 Bbl. Portable BUTLER Bulk Cement Bin with Fuller Full Automatic Electric Push Button Weigh Batcher.

SYNCHRONOUS MOTOR GENERATORS
100 K.W. RIDGWAY 3/60/2200-250-275 volt.
150 K.W. GEN. ELEC. 3/60/2200-250-275 volt.
200 K.W. RIDGWAY 3/60/2200-250-275 v., 900 rpm.

DIESEL GENERATORS
240 K.W. F.M. 3/60/2300 v.
300 K.W. Worthington 3/60/2400 v.
125 K.W. F.M. 250 v. D.C.

RAYMOND MILL
5 Roll High Side.

CONVEYOR PARTS
BELT: 1000 Ft. 60 In., 700 Ft. 42 In., 600 Ft. 36 In., 800 Ft. 30 In., 1642 Ft. 24 In., 517 Ft. 20 In., 297 Ft. 18 In., 1000 Ft. 14 In. & 16 In.
IDLERS: 36 In., 30 In., 24 In., 20 In., 18 In.
Head & Tail—Pulleys—Takeup for all sizes.
Steel Frames: 2,000 Ft. 24 In., 30 In. & 36 In. Sections.

ROTARY DRYERS AND KILNS
36 In. x 20 Ft., 3 Ft. x 30 Ft., 4 Ft. x 30 Ft., 54 In. x 30 Ft., 42 In. x 24 Ft., 5 Ft. x 30 Ft., 5 Ft. x 16 Ft., 5 Ft. x 60 Ft., 6 Ft. x 60 Ft., 6 Ft. 70 Ft. x 40 Ft., 5x30 & 8x84 Double Shell Dryers, 8x110, 7½x100, 8x125 & 10x20 Kilns.

STEEL DERRICKS
GUY: 8 Ton 85 Ft. Boom, 15 Ton 100 Ft. Boom, 20 Ton 115 Ft. Boom, 50 Ton 100 Ft. Boom.
STIFF LEG: 5 Ton 70 Ft. Boom, 15 Ton 100 Ft. Boom, 25 Ton 100 Ft. Boom, 75 Ton 135 Ft. Boom.

LOCOMOTIVES
DIESEL: 7—4½, 8 and 15 Ton 36 & 42 In. Ga.
GASOLINE: 3 Ton, 5 Ton, 8 Ton, 12, 14 & 30 Ton.
STEAM: 9 Ton, 20 Ton, 40 Ton, 60 Ton & 80 Ton.
ELECTRIC: 2 Ton, 5 Ton, 8 Ton, 17 Ton & 40 Ton.

SCREENS
VIBRATING: 2x4, 3x6, 2x8, 3x8, 3x5, 4x5, 4x8, 4x10, 48x72. HUMMER, ROTEX, NIAGARA & ROBINS, LINK BELT & HURON.
REVOLVING: 3x12, 3x16, 3½x18, 3x24, 4x16, 4x20, 4x23, 4x24, 5x30, 5x20, 6x20.

SAND WASHERS AND CLASSIFIERS
4 LINK-BELT A-60 In. Classifiers.
7 ALLEN Cones 4 Ft., 5 Ft., 6 Ft., 8 Ft.
30" Reciprocating Plate Feeder.

RAILROAD CARS
12—50 Ton Cap. Battleship Gondolas.
7—50 Ton Cap. Flat Cars.

SAUERMAN DRAG AND SLACKLINES
1— ¾ yd. Gas 1—1½ yd. Electric
1—1 yd. Electric 3—2 yd. 3 yd. & 4 yd. Electric

42 IN. BELT CONVEYOR
350 Ft. Barber-Greene Sectional Steel Frame Roller Bearing Belt Conveyor. New 1939.

JACK HAMMERS AND DRIFTERS
21 Worthington 169 Drifters.
12 Worthington 180 Drifters.
6 Gardner-Denver 15 Jackhammers.
45 Ingersoll-Rand Drifters S70, N75, X71, DA35.
11 Ingersoll-Rand S49 Jackhammers.

R. R. TRACK SCALE
125 Ton 56' x 10'6" Platform 4 Section.

WHIRLEY CRANES
5 Clyde 75 to 100 Ft. Boom.

DRILL SHARPENERS
5 I.R. 4K Shank Grinders.
6 Ingersoll-Rand 54, 40, 50 & 34's.
7 Sullivan Class A, & C.
8 Gardner-Denver 3A & No. 6DS.

CONE CRUSHERS
Symons No. 5½ and 7 Ft.

R. C. STANHOPE, INC.
(Cable Address: "STANEQUIP" New York)
Lincoln Bldg., 60 E. 42nd St., New York, N. Y.
Murray Hill 2-3075 or 2-3076

Vibrating Screens
1-deck 2'x8', 3'x5', 4'x7', 4'x8'.
2-deck 3'x6', 4'x6', 4'x7', 4'x8'.
Hummer 1 and 2-deck 3'x5', 4'x5', 4'x7'.
15-cycle Hummer Screen Generators.
5'x20' Revolving type on trunnion.

Crushers and Mills
Jaw 4x10", 7x10", 9x15", 18x12", 20x10", 24x12", 36x15" and 36x24".
Gyratory No. 3 Gates, No. 37 Kennedy and 11" Traylor.
Mills Jeffrey 24"x24" double roll crusher. Marcy Roller Mill 1'x2', Harosh Hammer Mill #1½.

Belt Conveyors:
12" to 56" Head and Tail Pulley Assemblies.
150—30" and 36" Trough Belt Idlers.
400' of 20"-w. 8-ply Belt.
Conveyor and Friction Belt.
Fairfield Plate Feeder, 24"x6'.
Belt Feeder, 54"x20'.

Bucket Elevators
20 Tons Selected Chain, Buckets, etc.
Complete Equipment for Open and Encased Continuous Vert. and Inclined types: 5"x35', 6"x32', 12"x35', 14"x32', 15"x50', 16"x60', 18"x40', 20"x40'.

Centrifugal Pumps
3"x2½" A-C. 250-gals. 150', 20-hp.
4"x4" Rumsey 400-gals. 80' head.
4"x3" LeCourtenay 3-stage 400-gals. 380'.
8"x6" Goulds with 22-hp. Motor.
Goulds 3-L Centrif. 500-gals. 150'.

Locomotives, Portable Track & Cars
36"-g. 4 and 8-ton Gas Locomotives.
36"-g. Side Dump Cars, 2 and 3-yds.
36"-g. Battery Locomotives, 2½-ton.
24"-g. Track, Flat and Dump Cars.

Miscellaneous
40-hp. Thomas Hoist, 2-drum.
15-hp. Lidgerwood Gas Hoist, 1-drum.
15 and 40-hp. Electric Motors.
15-hp. Speed Reducers, 15:1 and 78:1.
800-hp. Patterson Feedwater Heater.
150-hp. Vertical Boiler, 125-lbs.
50-hp. Locomotive Boiler, 200-lbs.
Clamshell Buckets, ½, ¾, 1¼, 1½-yd.
Dorr Classifier, Small size.

G. A. UNVERZAGT
136 Coit St. Irvington, N. J.

CONCRETE EQUIPMENT

Ready-Mix Blaw-Knox concrete plant, complete, large size, splendid condition, unusual opportunity; specifications furnished.
Heltzel bin, 225 ton, 4 compts., weigh batcher.
Blaw-Knox complete ready mix concrete plant.
Butler 100 yd. 3 compt. bin, weigh batcher.
200 ton rock storage bin, steel, heavy construction.
Fuller Kinyon bulk cement unloader, portable.
Fuller C40 rotary air compressor, electric.
Ransome 28-S 1 yd. Stationary mixer, elec.
Ransome Dual drum paver 27E.
Barber-Greene Model 62 loader, cats.

SPECIALS!!
4 ft. Symons Cone Crusher, complete.
I.R. Type D Wagon Drill with X71 drill.
I.R. Type FM Wagon Drill with X71 drill.
100 HP. vertical boiler, new 1940, complete.
20,000 gals. oil tanks with heating coils.
I.R. Air Compressor, 310 cu. ft. gas, portable.
I.R. Air Comp. 315 cu. ft., 2 stage, gas, port.
Sullivan Air Comp. 110 cu. ft., gas, port.

BUCKETS—STONE SKIPS
22—Steel stone skips, 2 to 3 yds.
1½ yd. heavy duty Blaw-Knox digging bucket.
1½ yd. Hayward rehandling clamshell.
1¼ yd. heavy duty Blaw-Knox digging clamshell.
¾ yd. Hales rehandling, clamshell.
1 yd. Hayward orange peel, 4 leaf.
¾ yd. Hayward orange peel, 3 leaf.

SHOVELS—CRANES
Bucyrus Erie Model 1030 electric tunnel shovel.
2—Marion Diesel shovels, 1¾ yd. cap.
No. 50-B Bucyrus-Erie electric shovel, 2 yds.
Bucyrus Erie Model 41B steam shovel, 1¼ yd.
Marion Steam Shovel, Model 32.
Ind. Brownhoist loco. crane, electric, 20 tons.
Browning loco. crane, 25 tons, steam.

LOCOMOTIVES—CARS
2—Vulcan 6 ton, gas, 36" gauge.
2—Whitcomb 4½ ton, gas, standard gauge.
8—3 yd. V type 36" ga. side dump cars.

CRUSHERS—PLANT
Gyratory crushers: K.V.S. 30, 37-S, 49; Telsmith 32, 8A, 8B; Traylor 8"; McCully 13", 8", 6".
Jaw: 6x12, 9x16, 10x20, 12x26, 13x30, 15x30, 16x32, 36x48, 48x60.
Symons 4' cone Crusher, complete.

RICHARD P. WALSH CO.
30 Church St. New York, N. Y.

NEW AND USED EQUIPMENT FOR IMMEDIATE SHIPMENT

Subject to prior sale

NEW—32" Cage Mill, 3 to 4" feed rock or gravel, good for maximum 50% crushing, 40 to 60 tons per hour.
NEW—Steel Truck and Wheels, equipped with new pneumatic tires, tongue for tractor hitch, 10-ton capacity, for mounting 40x20" rolls or 15"x36" crusher.
USED—9"x16" RELIANCE Jaw Crusher, good condition.
USED—Model 101 Type K DAY Limestone Pulverizer, 2 to 3 tons capacity.
USED—GRUENDLER No. 2 Monster Limestone Pulverizer, 4 to 5 tons per hour.
USED—No. 7 MITTS & Merrell Wood Hog, plain bearing, 14"x14" hopper opening, capacity 5-tons per hour.
USED—24"x18" LIPPMAN Portable limestone Pulverizer, with 14' elevator, in excellent condition.
USED—XXB GRUENDLER 24"x18" welded steel Limestone Pulverizer, 6 to 7 tons per hour capacity.
USED—SCHUTTE Type F, Model L, Hammermill with or without fan for sawdust, oyster shells, etc., in excellent condition.
USED—GRUENDLER light type, 3'x8' single deck Vibrating Screen.
USED—GRUENDLER 30"x12" sawdust, oyster shell or fertilizer Grinder, slow speed.
USED—50-16 SUPREME (GRUENDLER) Hammermill for sawdust, oyster shells, bones or fertilizer.
One (1) Factory re-conditioned LeRoi RA2P 65-HP gasoline power unit.

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Rows of heavy, free swinging, fast revolving hammers, crush the material by impact until of proper size to pass through the grates. By reducing large rock to 1¼", ¾" or agricultural size in one operation, the "Slugger" has enabled operators to produce these sizes at a very low cost per ton and with small investment. Seven sizes—6 to 150 tons hourly capacity.

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